The Jaguar XK8 (2003-2006MY) Rev L dated 06/27/19 by Gary R. VanRemortel vanremog@gmail.com. ***THIS ARTICLE IS PROVIDED FREE OF CHARGE FOR EDUCATIONAL PURPOSES ONLY AND MAY NOT BE SOLD UNDER ANY CIRCUMSTANCES.*** Parts diagrams are available at www.sngbarrattusa.com and www.terrysjag.com. Technical Service Bulletins referenced herein may apply to more vehicles than Jaguar acknowledges.

2003-2006MY-XK8WorkshopManual.pdf covering **VINs A30645 to A48684** is apparently no longer available from JagDocs.com, but I have the original 47MB file purchased back in 2012. I suppose Jaguar owns the rights to it, but if it can legally be posted somewhere for the good of the body, please advise. Most routine maintenance items are simple DIY tasks, but others require specialized knowledge, proprietary tools and/or a lift. My XK8 is a 2005MY North American (Left Hand Drive) convertible with 133Kmi. Changes made as original X-100 model matured into X-103 and X-104 have led to some errors and omissions in both Jaguar and aftermarket documentation. Part numbers included herein for convenience should be confirmed against your VIN when ordering.

Acceleration (0 to 60mph): 6.3sec
Alternator: 130A w/S6 Pulley
Average Fuel Consumption: 18mpg
Bore x Stroke / Compression Ratio: Ø86 x 90.3mm / 11:1
Brakes Front / Rear: Ø325 x 28mm vented slotted drilled disc / Ø305 x 20mm vented slotted drilled disc
Coefficient of Drag: 0.36
Curb / Gross Weight: 3993 lb / 4783 lb
Engine: AJ34 4.2L (4196cc) DOHC aluminum alloy 32-valve 90° V8
Fuel Capacity: 20gal
Lug Nut Circle / Thread / Socket Size / Torque: Ø4.75" [Ø120.65mm] / ½"-20 / ⅞" / 75 lb-ft
Maximum Power / Maximum Torque: 294hp SAE @ 6000rpm / 303 lb-ft SAE @ 4100rpm
Maximum Speed (ECM limited): 155mph
Minimum Oil Circulation Volume @ Maximum Pressure: 10gpm @ 66psig
Minimum Stopping Distance (60 to 0mph): 118ft
Minimum Turning Radius: 18ft
Transmission: ZF 6HP26 Mechatronic 6-Speed Automatic
Wheelbase / Width / Track / Length / Height: 102" / 71" / 61" / 187" / 50"
Wheels Front / Rear: ALY59794U85 Ø19 x 8" / ALY59795U85 Ø19 x 9" Chrome Atlas w/35mm Offset

Overview
The XK8 is among the most esthetically pleasing and superb GT cars in the world. This modern classic, inspired by the legendary E-Type, always draws attention. A used XK8 in great condition can be a bargain, IF you can maintain it yourself. Lack of a supercharger makes engine maintenance much easier than an XKR, and overall the car is not gratuitously complex. Some owners don't put a lot of miles on their Jaguars, so they will likely show effects of time before effects of mileage.

Jaguar discontinues part support 10yr after a model ceases Production and items specific to a single model slowly grow scarce in the supply chain. Jaguar branded parts always cost more than equivalent Ford parts, so do your research, since many Ford Mondeo parts were used on Jaguars. Take digital photos during disassembly and place small items like fasteners in Ziploc bags labeled for each subassembly. **Tape off all openings as soon as they are exposed and DO NOT let fasteners and/or broken off pieces of plastic connectors fall into unseen areas.** Rusty M6 and smaller common Steel bolts can be replaced with Stainless-Steel Hex Cap Flange bolts from Amazon. Be careful starting threaded fasteners into soft Aluminum castings and do not over-torque, as it is easy to cross-thread or strip fine metric threads. Fastener engagement into Aluminum should be 3 times fastener diameter (twice that of fasteners into Steel). Thread insert repair kits are available from Helicoil. Unless otherwise stated, torque values in factory literature are for dry threads. If you use anti-seize compound on structural bolts going into Steel (items with a propensity for rusting and/or seizing in situ) originally specified to be installed dry, apply sparingly and reduce torque by ~25%. When restoring circlips, ensure gaps are down, so as not to trap moisture.

For safety, always chock wheels and use well placed jack stands along with your trolley jack. Six ton rated Blitz Rhino plastic ramps can safely raise car 6". Bonnet can be stood straight up to improve engine bay access by disconnecting gas struts and placing shear bolts in hinge holes for safety. When disconnecting plastic connectors, it helps if parts are warm or their embrittled retention features can crack. **Remove O-rings/seals using a smooth nonmarring tool and lube them prior to installation. I use Krytox RFE.** I use only Permatex Ultra Grey and Blue Hylomar M gasket sealers. A Sullivan Glow Fuel Bulb with a short length of RC fuel line from your local hobby store works well for sucking old fluid out of brake and power steering reservoirs yearly, in lieu of flushing. Ensure your tool kit (in boot beneath spare tire) contains Towing Eye HJA4333AC (M20-2.5 right-hand thread) often misplaced at initial dealer prep. Terms LEFT and RIGHT used herein are relative to driver's seated position.

Clearing existing ECM Adaptations can expedite adaptive learning process for certain functions. Ref TSB 303-01. Expect driver side systems to wear out before passenger side due to higher usage.

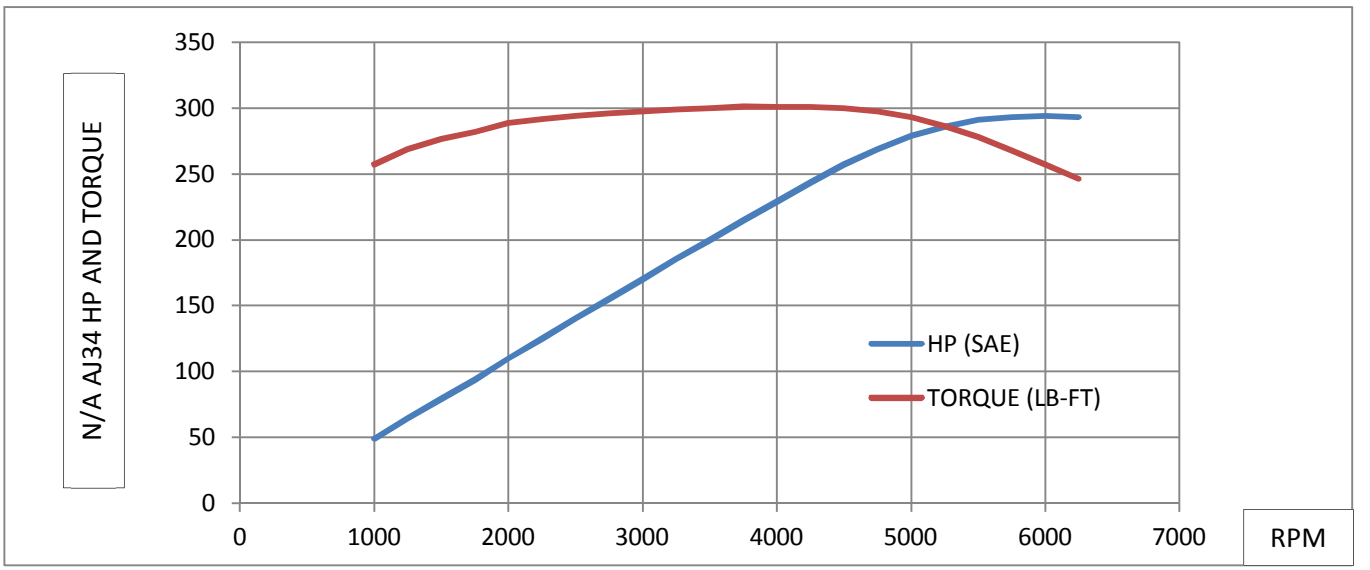
Body

US vehicles have damper type front and rear bumper mounts to meet low speed impact regulations. Inadequate room between bonnet and engine prevents fitting of a proper strut tower cross brace, but triangulation braces do run to firewall. Convertibles have further cross bracing under engine bay, stiffening members in rocker panels, tubular bars in rear sides of cabin and a reinforced windshield frame to provide rollover protection. The Body-in-White is stiffer, lighter, consists of fewer panels and sits on a modified XJS floorpan, although there is still significant scuttle shake. High-strength Steel is used for front longitudinal members, seatbelt anchors, suspension mounting points, bumper mounts and side impact door beams. Watch for paint cracking at welded rocker panel joint, especially on convertibles, indicating possible structural damage. Ensure door drains are clear/open.

Engine

The totally Jaguar designed and manufactured closed deck (no valley pan) AJV8 engine has 5 plain bearings, is compact, lightweight (441 lb), refined and strong running to its 6400rpm redline. Crankshaft is spheroidal graphite cast Iron and Krebsoge sinter-forged steel connecting rods are fracture-split. Unlike the Jaguar V12 engine, the AJV8 torque curve rolls off noticeably below 2000rpm.

The original AJ26 4.0L engine evolved into the AJ34 4.2L in 2003MY with increased performance, reduced emissions and improved economy, with the few remaining issues having simple DIY fixes. Nikasil cylinder problems in early AJ26s (due to high Sulfur content fuel of the era, combined with excess moisture brought on by short trips) prompted a return to cast Iron sleeves. BSFC is a very efficient 0.40 lb/hp/hr and warm cylinder compression is 190-210psig. Cold starting idle is ~1200rpm, dropping to ~650rpm in <45sec. Ref TSB 303-12.



Valve Train

Morse Hy-Vo (inverted tooth) primary chains and Aluminum-bodied chain tensioners now better handle abrupt torsional load reversals in Variable Valve Timing (VVT) equipped unboosted engines. But chains still run in plastic guides that need replacement before they break into bits due to heat embrittlement around 200Kmi. You'll need Harmonic Damper puller and crankshaft/camshaft locking tools for the job, but it is only time consuming, not difficult.

Intake cams rotate up to 48° in 0.7sec. Gun-drilled camshafts, shimmed-for-life inverted bucket lifters and light (Ø5mm) valve stems keep valve train mass and cam loads low. Intake and exhaust valve axes are 28° apart in Cosworth designed pentroof heads. Valve lift is 9mm and clearances are .008" [0.2mm] intake, .010" [0.25mm] exhaust. If engine oil pressure is below 18psig (1.25bar), VVT units have insufficient pressure to release internal stopper pin. Stopper pin locks camshaft to VVT unit to ensure camshaft stability during next engine startup. If unit or stopper pin is damaged, it will cause a rattle during startup. Earlier engines had a history of developing leaky valve seals NCE2528AC, so pay attention to your oil usage and tail pipe emissions. Jaguar specifies Premium (91RON) unleaded fuel.

Ignition

Denso 32-Bit electronic management system fires Denso single-bolt pencil coils (differing from two-bolt coils on the 4.0L). Starting 2003MY, cylinder designations meet ISO standards, Bank-1 (right side) being cylinders 1, 3, 5 and 7 and Bank-2 (left side) being cylinders 2, 4, 6 and 8, front to back and firing order is 1-2-7-3-4-5-6-8. Ref TSB 303-29. Oil found within spark plug wells is either leaking from valve cover ring seals or plugs were not properly torqued. Changing plugs is an easy DIY job taking ~45min. I keep plugs and coils identified with cylinder number to help in isolating problems.

Loss of ignition in any cylinder lets unburned fuel go through engine, potentially contributing to cylinder scoring and/or catalyst damage. A flashing Malfunction Indicator Lamp (MIL), often called Check Engine Lamp (CEL), requires stopping immediately to isolate the offending cylinder(s) (usually a bad coil or spark plug). Disconnect each fuel injector connector one at a time with engine idling and check for an rpm drop. Leave injector connector on unresponsive cylinder(s) disconnected and limp home on reduced power if needed. 4-pin coils allegedly send firing confirmation signals back to ECM. Loss of this signal in theory should be able to shut down fuel injection to protect catalyst, but I wouldn't trust the ECM to do this. There is a bit of an inverse relationship between plug gap and coil life and for .040" [1mm] nominal plug gaps, coils should last ~120Kmi. If one coil has failed, the rest are about to.

If driveshaft is out of balance or damaged, crank angle sensor might pick up on these vibrations. This can suspend misfire monitor testing and prevent monitor from completing emissions monitor test. If you have a vehicle with random misfire codes but no detectable misfires, have driveshaft balance checked.

Lubrication

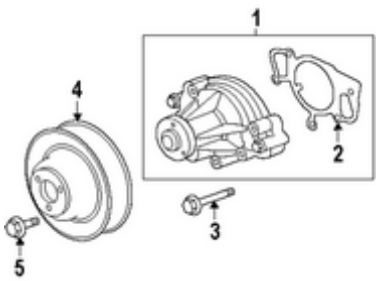
I change oil and filter every 5Kmi, but it's probably safe to go 7.5Kmi. I use Pennzoil Platinum 5W-30 in 5qt jugs, $22 from Walmart and Mahle filters, $17 on Amazon. Their Ultra or Euro oils are even better if you prefer a longer service interval. Cast Iron sleeves experience more oil loss than Nikasil bores. I have FilterMag SS300 and Fumoto F106SX (M14-1.5 thread) oil drain valve installed. Tracer Products offers a kit consisting of dye and long wave UV black light to help locate leaks. 4.2L cars all have oil coolers and the hoses running from front of engine to cooler should be inspected regularly and replaced every 10yr. Ref TSB 303-S846.

Cooling
A low volume, split flow, high exchange rate cooling system allows engine to reach operating temperature (>190°F coolant temp) in <4min and block is claimed to vary <4°F corner to corner. Better thermal insulation than light Aluminum shields should have been used to protect cabin from engine, catalysts and center silencer heat.

Coolant is Extended Service Life Organic Acid Technology (OAT) ethylene glycol (Dex-Cool colored orange, meeting WSS M97B44-D). Ref TSB 100-16. I pressure test system cold at 14.5psig (1bar) using a Harbor Freight #69258 tester. ORANGE #5 adapter is a perfect fit without having to pinch off atmospheric recovery tank hose. Black #7 adapter in the kit can be used to pressure bleed brakes as long as reservoir fluid level is kept topped off. Radiator should be replaced before 180Kmi. Expansion tank is robust, but magnetic float sensor is pretty much toast by 90Kmi. To release sensor connector, push center of wire clip.

A 14.5psig (1bar) capped expansion tank combined with an atmospheric recovery tank low in right front wheel arch ensures pressurized portion of system never develops an air pocket, which is critical for using Dex-Cool. Keep atmospheric recovery tank >¼ full or plastic “straw” can un-port (suck wind). If air is getting in, either there is no coolant in atmospheric recovery tank, “straw” has a leak, pressure cap is bad or there is a leak elsewhere that must be found and fixed. To make atmospheric recovery tank state of fill assessment easier, cut a Ø2” hole in rear of wheel arch liner ~8” up from rocker panel and install a removable plug. To inspect, remove plug and side repeater lamp and shine a penlight in. An occasional slight glycol smell upon shutdown doesn’t necessarily mean you a have a coolant leak, since recovery tank is vented to atmosphere beneath chassis. If LOW COOLANT lamp ever comes ON, STOP immediately, top off and ensure recovery tank is >¼ full.

Check for coolant seepage between front and rear bearings of coolant pump and around gasket. Black glass-filled Polyamide (PA/Nylon) impellers on original pumps degraded in short order with Dex-Cool, leading to some overheated 4.0L engines. Ref TSB 303-60. Impeller was changed first to black PolyPhenylene Sulfide (PPS) and finally to white PPS. 4.2L engines got the improved pumps, but since even PPS impellers have been known to spin on their shafts, aftermarket Aluminum impeller equipped pumps became available. I suspect PPS impeller pumps are more efficient, but Aluminum impeller pumps more reliable. Pumps last for 120Kmi, should be supplied with a quality rubberized metal gasket and changing it is an easy 1hr DIY job. Change serpentine belt, thermostat, pump, check idler/tensioner pulley bearings and inspect Outlet Pipe Assembly at the same time. Jaguar recommends replacing pump pulley bolts AJ81256 (Find No. 5) because they “Torque Turn to Tighten” them. I used Loctite 242 and torqued them normally for their size (there’s no way this is a critical structural fastening, since hub OD and centering disc take entire radial load).

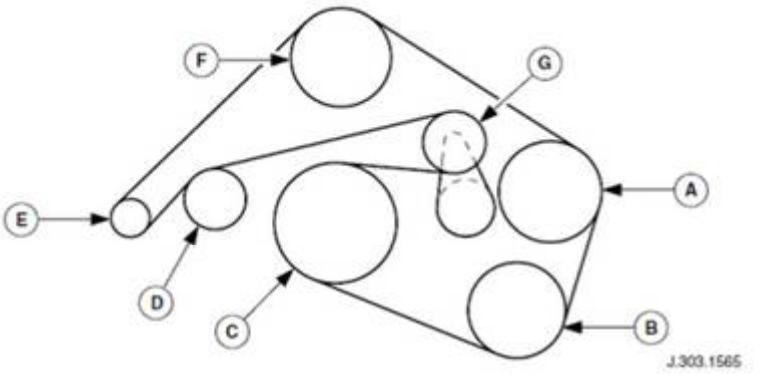


Outlet Pipe Assembly on 4.2L engines is different from the 4.0L and consists of three separate glass-filled PA moldings (Thermostat Cover, Pipe and Duct), a four-piece thermostat, temperature sensor and seals. There is no aluminum version of this assembly, so examine for cracks regularly and replace every 60Kmi. Remove intake manifold front plate to improve access to rear duct bolts and replace with Torx C2C42062 to make future access easier. Upon reassembly, seat all bolts lightly to compress seals, torque four pipe assembly bolts, draw bosses at top of pipe and duct together with a spring clamp, then torque duct bolts. Outlet Pipe Assembly replacement takes ~1hr. OE "constant tension" spring steel hose clamps on large radiator hoses should always be replaced.

Plastic burp line running from thermostat pipe to expansion tank sees substantial engine heat. I replaced it with 5/16" [8mm] ID reinforced silicone hose from Z1 Motorsports. Replace short hose segment connecting rear nipple of expansion tank to plastic tube going to atmospheric recovery tank with same hose, as OE hose is prone to swelling and leaking here. Valley hoses supplying engine coolant to heater matrix via 'octopus' hose run in hot V-space. Supply Hose runs right side and Return Hose on left. Replace small coolant lines to EGR valve and throttle body when you replace valley hoses. See Climate Control Section for 'octopus' hose details. Knock sensors sit at edges of V-space and can suffer permanent damage if immersed in coolant.

Main radiator is divided into coolant and transmission fluid portions. A thin A/C radiator core sits in front of main radiator. Low in front is a power steering fluid heat exchanger and below that the oil cooler. Radiator drain plug Dorman 61138 is located at bottom of right end cap facing aft. It is molded black Polyethylene (PE) with M10-1.5 threads, has a rubber seal and barbs to retain it in port when unscrewed. Two rather fiddly square head bolts hold top of fan shroud against radiator. Wedge a bit of foam rubber or double-stick tape between their heads and molded radiator slots to ensure they stay put if fan assembly is to be removed.

Serpentine Belt
4.2L engine uses a 6-rib serpentine belt. Spring tensioner pulley is released using a ⅜" square drive breaker bar. Ref TSB 303-02. Replacement is an easy DIY job taking <15min. Tensioner and idler pulley bearings are good for 180Kmi.



A = Power Steering Pump
B = Air Conditioning Compressor
C = Crankshaft Pulley
D = Idler
E = Generator
F = Coolant Pump
G = Tensioner

Induction and Crankcase Ventilation Systems
Induction snorkel in right front quarter panel feeds into lower air box, up through filter, out upper air box w/integrated MAF sensor, into induction tube C2N1041 to rear throttle body. It is fairly restrictive due to bellows and 90° turns. I have been running the less restrictive K&N 33-2190 re-usable filter in stock air box for 85Kmi, however, less restrictive also means less effective than best synthetic media, so there is a bit of a tradeoff. Clamp bosses on lower portion of OE filter box XR823351 can crack from combined effects of clamp stress and engine heat. The lower portion of the naturally aspirated air box is unaltered since day one and used boxes can often be had for <$50 from salvage yards. The $30 M6-1 threaded Instrumount URO EAC8130 anchoring air box often tears/separates with age. MAF sensor should be cleaned every 90Kmi. Bonnet liner/insulator blanket sags in its fastenings over time and, if induction tube is not fully seated, bellows section can become damaged. Bellows section can also crack, so check this area well. Intake manifold Steel front cover inside surface can become pitted in seal contact area (especially if you install a catch can, because now it won't get oiled) causing a vacuum leak. Apply DC4 high vacuum grease to this area.

Everything going into modern engines must be filtered and metered, so ensure all plumbing and seals (including dipstick/breather pipe O-rings and oil filler cap) are leak free. Cam covers have internal mesh filters, there are no longer restriction orifices in ports and full load/part load breather functions are reversed from 4.0L engines. A 30" Norma V2 NW15 part load breather pipe AJ88622 on Bank-1 connects control valve AJ87773 to intake elbow, providing high vacuum at partial throttle. This valve can get stuck in the open position and cause a rough idle. A 26" Norma V2 NW10 full load breather pipe AJ87221 on Bank-2 connects to induction tube providing vacuum at full throttle. OE corrugated breather pipes embrittle in engine heat and Jaguar eventually switched to a heavier smooth bore molded pipe. I can make new pipes, so email me directly if you need either corrugated or smooth wall .594"ID x .750"OD black PA pipe (from Amazon). My corrugated pipes are heavier wall than OE, yet more flexible when turning corners. I recommend smooth wall only if you are incorporating a catch can, because hoses clamp to them more securely. I currently have only right-angle Norma V2 NW15 connectors, but if yours are in good condition, they may be reused. PA66 GF30 markings on these connectors merely identify the plastic and percentage of glass fill, for recycling purposes.

Crankcase ventilation draws atomized oil droplets into the intake manifold, making a mess and degrading combustion. Some European cars have cyclonic devices to wring out this oil, but not our XKs. I installed a Sporacingrts Compact 2-Port Closed Catch Can (a Mishimoto knockoff) and Stainless-Steel barbed fittings from Amazon, modified/connected as follows. I used PST pipe thread sealant. Ensure can and plumbing are leak-free by immersing in water and pressurizing. Mount in a hot location (>90°C) so volatile fraction is constantly driven off. I mounted it just above Bank-1 catalyst.

1. Remove internal filter/baffling
2. Place a small Stainless-Steel pot scrubber inside and close up (IN/OUT markings are now ignored)
3. Install two Ø¾" [19mm] barb and one Ø¼" [6mm] barb ⅜"-MNPT Stainless-Steel fittings (Amazon)
4. Attach reinforced Ø¼" [6mm] silicone hose from drain to a remote petcock or Curtis valve
5. Remove OE part load breather pipe AJ88622 from Bank-1
6. If breather pipe is corrugated, make Black PA pipes (from Amazon) using old connectors
7. If breather pipe is smooth bore, cut at rear transition to make two sections
8. Flare or bead ends by heating and forming
9. Install Pegasus reinforced silicone Ø¾" [19mm] ID hose joiners with spring clamps
10. Mount high in the engine bay using fender washers against soft heat shield
11. Use a strong zip tie to support heat shield against nearby refrigerant pipe
12. Drain trapped oil while warm at each oil change and close drain petcock tightly

I like having a vacuum gauge port for taking general engine health readings (BARO - MAP = VAC for naturally aspirated engines). **Example: if Ambient BARO is 30inHg – OBD2 Live Data MAP at idle is 12inHg, therefore VAC at idle should be = 18inHg.** If you have a vacuum port, you can verify VAC, and thereby cross-check MAP. Cut booster pipe in an accessible area and graft in a capped Ø¼" [6mm] barbed Brass tee using a heat gun to soften pipe ends. **Just make certain that it can't leak or vacuum brake boost will be negatively affected.** High temperature black silicone nipple caps are available from www.034motorsport.com.

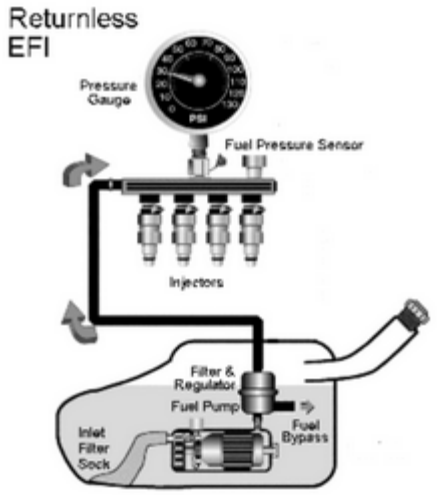
Intake elbow booster pipe fitting C2S15816 consists of three pieces. Brass ferrule pressed into Aluminum casting is best left alone unless obviously damaged, but both black PA locking insert and O-ring need replacement every 90Kmi due to heat embrittlement. O-ring seals against pipe OD and serves as the spring on which insert 'spread release tines' bear. Embrittled O-ring often breaks up and gets sucked through engine, leaving just the locking insert. Higher temperature 8.5mmID x 2.5mmCS Viton O-rings are available from McMaster-Carr. If throttle body is removed from elbow, booster pipe disconnected at passenger side firewall compartment and port inside intake elbow plugged with a finger, you can test for leakage or use a smoke machine.

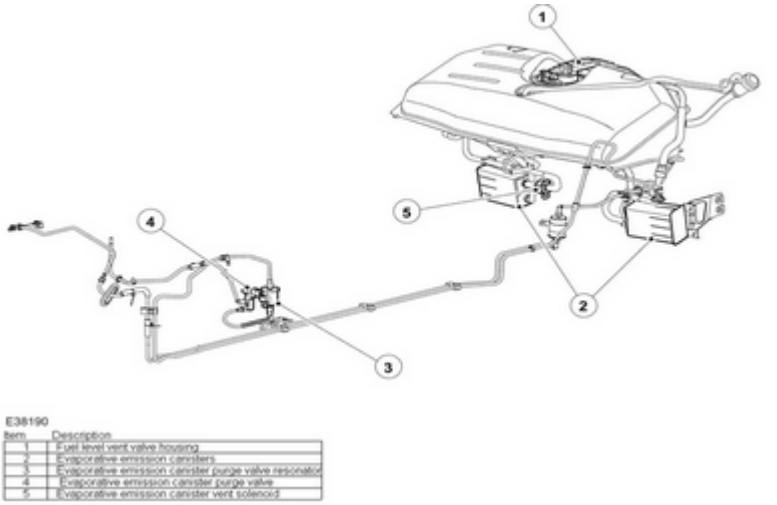
Intake manifold removal sequence is as follows:

1. Pull fuel pump F5 in boot fuse box
2. Remove engine cover
3. Remove induction tube
4. Remove breather pipes
5. Unbolt coolant expansion tank
6. Disconnect all sensor, fuel injector, throttle motor and MAP connectors
7. Unbolt EGR valve from throttle body
8. Remove throttle body from intake elbow as needed
9. Disconnect booster and vapor recovery pipes from intake elbow
10. Disconnect fuel supply line at fuel rail
11. Unbolt and remove intake manifold w/fuel rail

Fuel System

Beginning 2003MY a returnless fuel system was adopted from Ford with a new PA jacketed in-tank vane pump C2N1146, integral float sensor and particulate filter sock. In-tank pumps rely on fuel for cooling, so don't allow fuel to regularly get below ¼ tank, but conversely don't overfill or you can foul vapor canister system. Advantages of returnless systems are lower vapor loss and simpler fuel line routing with fewer opportunities for leaks. Reduction in circulated volume allows for a smaller fuel filter, but returnless systems may have a greater propensity to vapor lock. Vapor recovery canisters are now mounted behind rear axle, so as rubber hoses crack over time, at least they can be easily seen. Engine intake elbow left side spigot is for Norma NW8 pipe (an easy point to connect a smoke machine to intake manifold) coming from Evaporative Emissions Purge Valve/Resonator in left front wheelarch, behind liner. Many OE Purge Valves have been superseded due to performance issues. Ref TSB 303-62am. It is critical that valve open/close without sticking when commanded by ECM and that all plumbing remain leak free or idle can become rough with fuel trims varying wildly.



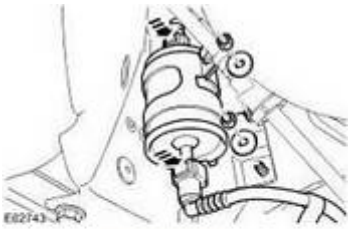


E38190

Item	Description
1	Fuel level vent valve housing
2	Evaporative emission canisters
3	Evaporative emission canister purge valve resonator
4	Evaporative emission canister purge valve
5	Evaporative emission canister vent solenoid

Anytime engine is shut down and started back up in hot conditions with insufficient time to cool, vapor may have formed in dead-ended fuel rail, with Winter fuel blends increasing this tendency. Little can be done to insulate steel fuel rail from conducted engine heat except to keep cooling air flowing through engine bay. If you get a lazy fuel injector, engine may start but idle poorly, until excess fuel burns off. A scan tool may show DTCs P0301 through P0308 and, if it happens again over a short period of time, you may get a MIL and DTC P0316. Injector cleaning and flow balancing may be needed.

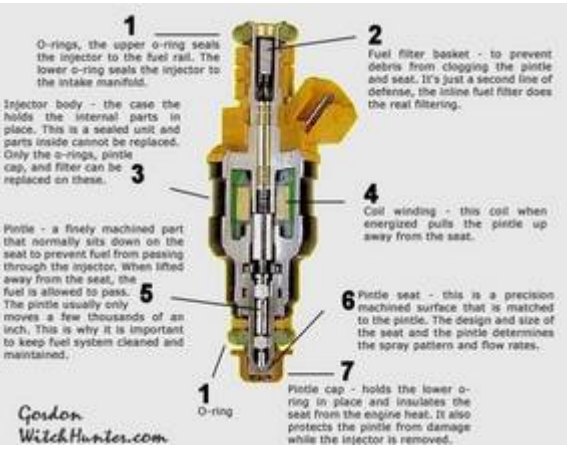
Ignition switch has four positions, 0 = OFF, I = Aux/Acc, II = Ign ON and III = Mom Start. With ignition switch in Positions II and III, 12VDC is supplied via F5 in boot fuse box through Fuel Pump Module (FPM) to pump. There is no longer a fuel pump relay. Engine Control Module (ECM) polls pressure sensor AJ87977 and temperature sensor LRA1600BA on Bank-1 side of fuel rail and commands FPM to duty cycle ground circuit of fuel pump (between 5 and 50%), thereby regulating pressure. FPM tries to maintain 55psi, relative to MAP.



Starting 2003MY, fuel filters changed, although many parts suppliers still haven't gotten word. Instead of threaded hex nut O-ring sealed ports, newer filters are Ø5/16" [Ø8mm] straight tubes with raised circumferential ridge to capture radial spring clip of Norma-Quick quick release fitting. A slick surfaced tool like Lisle 39410 is needed and must be driven firmly/deeply into fittings to release.

To change filter, get left rear of car up on jack stand, remove wheel, pull F5 in boot fuse box and try to start car or release fuel rail pressure at Schrader valve. Two 4" long ¼" square drive extensions snapped together are needed to reach 10mm headed nut holding filter bracket to underbody. Once free, release fittings. Fuel will not siphon out of tank with filter disconnected. A bit of fuel in forward line will drain, but the volume is small. Flow direction is shown on filter, rimmed end faces down and forward. Any supplementary barbed fittings supplied with new fuel filter may be discarded. Ensure Schrader valve core on fuel rail is well seated and quick disconnect fittings are snapped back together properly before you reinstall F5, repressurize the fuel system and check for leaks. It's ~45min job.

An inline Pulse Damper on the line near fuel rail merely smooths out pressure pulses. Disconnect line at fuel rail by unhooking safety clip and use Ø½" fuel line tool (310-D005 or equivalent) to release fitting. Unplug sensor connectors and remove entire rail with injectors attached. On the bench remove each clip and injector from fuel rail. I mark injectors with cylinder number for reference.



2003-2006MY US market XK8s use orange Denso fuel injectors Jaguar AJ82353, Denso 195500-4280. These 20 lb/hr @ 43.5psig (3bar) injectors (also used by Land Rover, Ford and Mazda) have improved targeting and a cruciform array of 12 teeny tiny orifices that must be kept fastidiously clean. They are 13.6Ω impedance. Injector orifices and internal pintles accumulate varnish over time and valve action can become sluggish. www.mrinjector.us has new filters and pintle caps are Injector-Rehab 2-252. Screw a #10 sheet metal screw into each inlet filter and use to pry out. If you suspect individual injector firing issues, a Noid light (Lisle 27800) or current limited LED can confirm turn on pulses are being received from ECM.

If you DIY clean injectors, keep volatile solvents contained, ground static sources, keep sparks away and use a safe/low TURN ON voltage at lower than 80% duty cycle to avoid overheating their coils. When an injector shuts OFF, back EMF from collapsing flux field produces a sharp spike, so use a back biased (Cathode to +V) flyback diode such as 1N4005 in any switched circuit as a discharge path. Replace 8mmID x 3.5mmCS upper and 9mmID x 3mmCS lower Viton O-rings. Reseat each injector individually into rail and reinstall retention clip before reattaching to intake manifold and final leak testing. There are many good injector cleaning/balancing services around using ASNU or similar bench systems.

Throttle

4.2L throttle bodies C2C20541 are all new, simplified and pretty trouble-free. Disconnect battery before cleaning throttle body with B-12 and ECM will automatically adjust for butterfly position once everything is powered back up. Electronic drive-by-wire throttle gives smooth accurate power delivery, although an overly robust pedal return spring continually fights you. There is a special tool and procedure in XK8 Workshop Manual for adjusting cable tension from pedal up to sender. More stylish pedal covers similar to those in Aston Martins are available online from Ultimate Pedals.

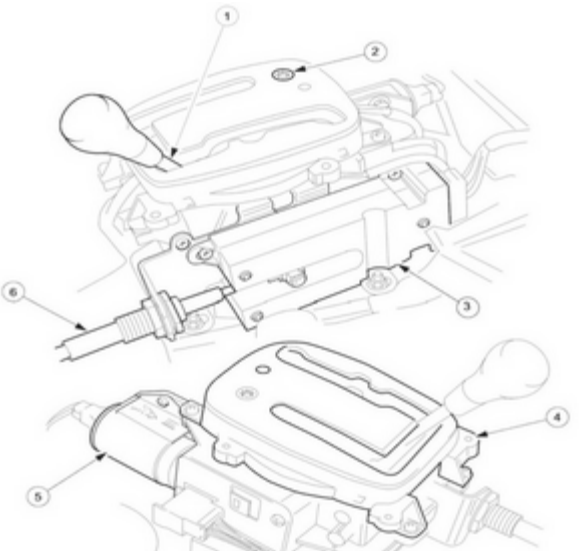
Transmission

ZF 6HP26 gear boxes are pretty robust and are common to many brands of luxury sedans and sporting cars. A single planetary and dual planetary (Lepelletier) gear set provides six forward gears (ratios are 4.17, 2.34, 1.52, 1.14, .87 and .69) supporting engines up to 444 lb-ft of torque. This box incorporates Bosch Mechatronics and there is substantial shift lag. When placed in reverse (ratio 3.40) ECM limits maximum throttle body opening to 18°.

As with many modern transmissions, there is no dipstick, Jimmy. Fluid and filter/pan should be changed every 60Kmi. Unless you do a full flush through fluid lines running to cooler, only half of the 10qt capacity will drain during filter/pan removal (the rest being trapped in torque converter, lines and cooler). Always confirm you can loosen fill plug before you remove drain plug. All ZF parts and fluids can be had at lowest prices from California Transmission Supply Company (CTSC). 80% of failures in this transmission result from a breached separator seal or worn E-clutch pack.

Refilling involves pumping fluid with engine running, shifting through all gears, measuring fluid temperature, pumping more fluid, until fluid drips out, and then installing fill plug, all the while working around hot exhaust pipes. There is no thermostatic valve in cooler circuit. Original T27 headed filter pan fasteners often cam-out during first filter change, so ZF switched to T40 driving recesses. If you still have T27s, buy 21 CTSC 0736 101 486 01 screws and install with anti-seize compound. Mechatronic connector sleeve CTSC 0501 216 272 01 should also be changed at the same time. Examine magnets in old filter/pan for swarf.

After refilling, and any time jerky shifting is experienced, it's good to verify that TCM firmware is current, adaptions are cleared and a special driving cycle performed. Before clearing adaptions, it is wise to record the existing values for future comparison purposes. See Mickey Figueroa's explanation on YouTube and Ref TSB 307-01 and JTB00145. If you get ZF bark during gear changes, an approved friction additive may be needed.



Remove screw/plug (Find No. 2) on shifter surround and defeat shifter lockout with your ignition key to limp home on a failed Brake Pedal Position (BPP) switch or solenoid. After a time, solenoid (Find No. 5) can slap against housing as you apply the brake in PARK. I put a block of EPDM foam inside to soften pawl stop. J-Gate shifting made clunks in console, so I packed surround internally with ½" thick open cell urethane foam.

In Sport Mode (shifter surround button UP and lit) higher rpm shift points suit a more assertive driving style and J-Gate allows selecting a lower limiting gear for better engine braking in town or on mountain roads. Linear Switch Module (LSM, Find No. 3 above) begins to get intermittent in higher mileage vehicles and manifests as inoperative Sport Mode (and no Sport Mode lamp), no J-Gate functionality (nor manual gear lamps) and sluggish automatic shifting. It resets itself after two key cycles and is apparently caused by switch contacts sending implausible signals to TCM, since no DTCs or Limp Home warnings are thrown. If it becomes a chronic condition, DeoxIT Gold G5 helps or LSM may need replacing. OE shifter knobs are pretty pedestrian looking, relative to rest of cabin, so check out British Autowood's products. Knob just screws off lower jam collar. Install using Loctite 242.

Driveline
The tubular steel driveline has a Guibo (above, also called Roto-Flex Coupling) at transmission end and a center stabilization bearing bolted to guard pan for refinement. Critical balancing of driveline must not be disturbed, so mark all bolt positions, keep paired up with their specific nuts and don't allow anything to move until each item is restored to its original position. Study everything before disassembly and ensure you have it oriented correctly prior to reassembly. Coat rubber with DC-4 compound to keep it from drying out.

Differential
There is no drain plug and ½" square drive fill plug is in a difficult to access location on this 3.06:1 differential. Do the fluid service at 120Kmi even if pinion seal hasn't started to leak. Unless you have a special installation, there were no Limited Slip Differentials installed in XK8s. Jack up rear of car (to let half shafts rotate freely for easy access) yearly, grease Zerk fittings on four U-joints and they should last over 200Kmi. These have a tendency to throw grease, so power wash rear axle area periodically.

Exhaust
Exhaust manifolds are thin wall Stainless-Steel, attached with heat shields, long bolts and spacers to maintain proper tension and compensate for differential coefficients of thermal expansion. This is a low thermal inertia system with closely coupled catalysts, but their exteriors rust badly. An electrically operated EGR valve was reintroduced in 2003MY for emissions compliance plumbed between intake elbow and Bank-1 exhaust manifold. Gaskets here can leak and EGR valve pintle sometimes sticks as valve ages. In any rough idle troubleshooting process include a stuck open EGR valve in your checks.

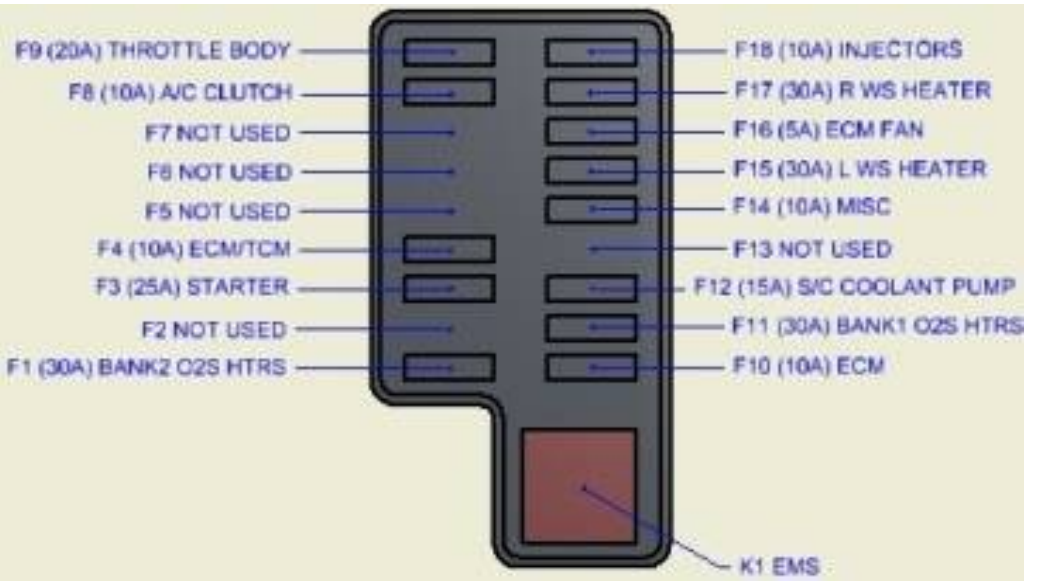
There are two wideband linear upstream air/fuel ratio sensors and two conventional nonlinear downstream O_2 sensors. Both are 4-wire heated types, their lifetime is typically ~120Kmi and they slowly degrade due to catalyst depletion. Upstream sensors are accessible from above, but coolant expansion tank must be detached first. Downstream sensors are accessed from underneath. Connectors are mounted on tabs behind throttle body. Upstream have gray connectors and downstream black. Lift each mated connector straight up off its mounting tab one at a time. They will release with a sustained upward force and present enough slack in harness to unmate. Remove sensors using a ⅞" [22mm] crowfoot socket, use Copper anti-seize compound and torque to 33ft-lb.

Exhaust system is a fairly restrictive but extremely quiet five box Stainless-Steel design. Pipes tuck up far above rear axle, making tight bends. Replacing just aft boxes with aftermarket straight through pipes can get you a more aggressive sound, but irritating drones may result at certain rpms. There are also full “Cat Back” systems, but they are spendy.

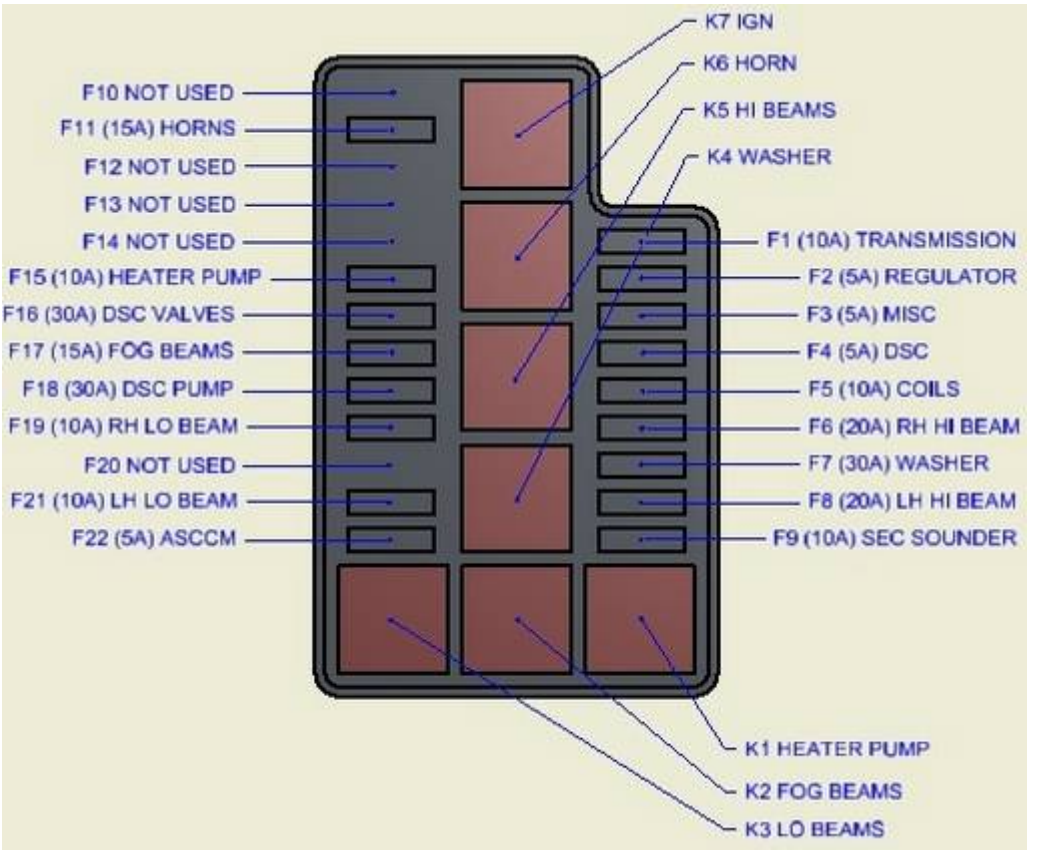
Electrical

Multiplexed electronics control various vehicle functions over a network of interconnected electronic modules operated by differential low current switching. Control commands are encoded at each output device to be utilized at a specific destination. This communications protocol enables many messages to travel over a single pair of wires. Communication between various electronic control modules enables transmission shift program to be altered when traction control system is activated, helping maintain control under slippery conditions. When driver switches on rear window defogger the message is acted on not only by appropriate heating coil control circuits, but is also noted by engine management system. In this way engine idle is adjusted to compensate for increased drag on alternator. Many control modules require special programming by the dealership if they ever need replacement.

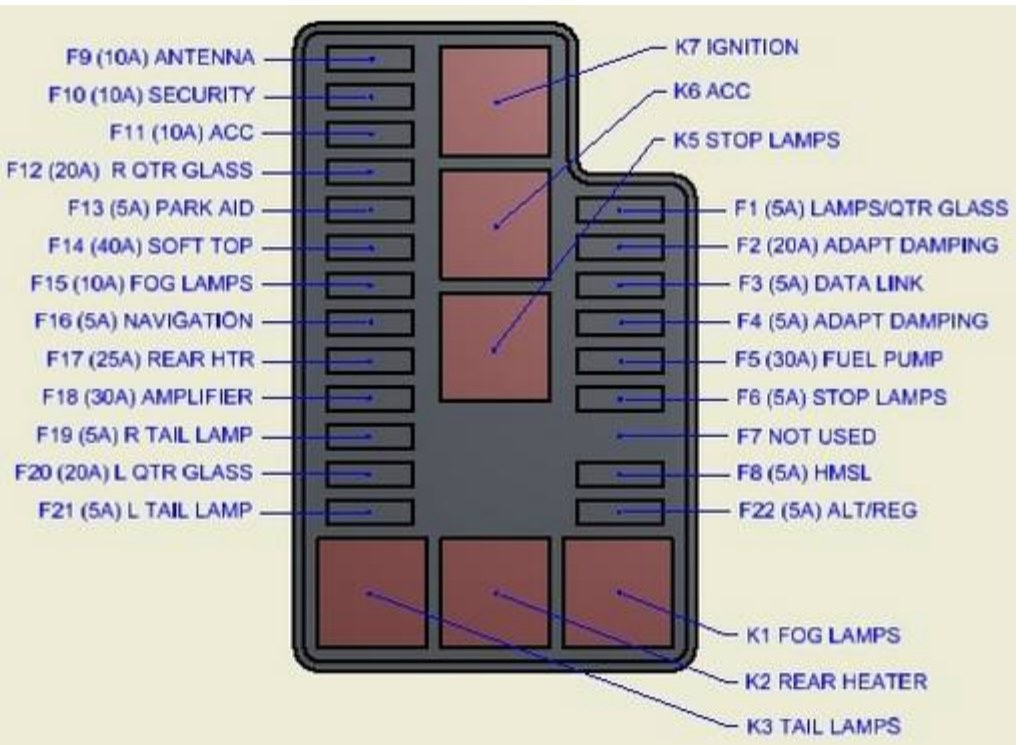
Jaguar electrical diagrams are conventional and easy to follow. With age the potential for simple component failures becomes rather high. If you can follow diagrams, you are well on your way to defining the problem, and a problem well defined is half solved. All relay coils and other similar inductive loads have internal protection to reduce control switch contact pitting. Knowledge of which relay does what may help in a roadside emergency, allowing you to trade a failed relay in a critical circuit for a working one from somewhere else. Referring to wiring colors, I found a few relays in my car placed on wrong mounts, so I restored them to agree with Jaguar documentation. Brown SPST relays are most commonly used. Notched/cutaway corner of fuse boxes indicates F1 position.



Engine Management Fuse Box (inside Right Firewall Bulkhead)



Engine Compartment Fuse Box (near DSC)



Boot Fuse Box (near Battery)

Windows are frameless, and to ensure a quiet interior at speed, were designed to drop slightly upon door opening and bump back up into rubber seal upon door closing. Jaguar recommends disconnecting battery before beginning work and reconnecting upon completion, as many circuits remain live at key OFF. Allow more than 30sec between disconnect and reconnect. Anytime battery power is interrupted and restored, window positions need to be retaught. Sit inside, close both doors, turn ignition key ON (Position II), raise window switch and hold until you hear a click (a second or so after fully open), then lower window switch and hold for another few seconds until you hear another click. Confirm window drop upon opening door and window rise upon closing. Do this for both windows/doors. **If loss of BOTH window limits keeps occurring, either battery is at end of life or there is a problem with the charging system.**

Ensure car is unlocked, windows down and keys in your pocket anytime you intend to disconnect battery. **If you mistakenly close boot lid while the battery is disconnected, external +12VDC power can be applied to engine bay power tap or use the manual key slot in the rear badge.**

There is a tube for venting battery outside through a rubber grommet. Alternator C2C19630 contains a replaceable internal rectifier/regulator JLM20187 cooled by forced-air through a fixed tubular C-shaped tube and removable flared duct HJA4477AD (retained by a single M5 bolt) underneath. This duct blocks oil filter, is usually first item removed, last reinstalled during oil change and therefore is often misplaced by careless service personnel. It is split on aft end to allow center tab to capture the tube and then clips into radiator cross bar up front before bolting. If yours is MIA, you should replace it. Every 20°F cooler you can keep rectifier diodes doubles their life.

Molded end retainer tabs on side marker lamps (and other similar polystyrene or polycarbonate lamp fixtures) stress crack over time. Take them out, fill gap between tab and body with a small piece of rubber channel and reinstall to substantially extend their life. A small piece of EPDM sponge placed under fuse box cover latches can restore their mojo.

When you need to replace a power antenna mast, it is A068 $20 from www.antennamastsrus.com. Chrome antenna nut has very small flats down in rubber grommet for a wrench and track teeth face aft.

Turn signal sounds and other chimes are produced by a Ø2½" 65Ω speaker LXF2280AA on right side of steering column. Top down on a sunny day, turn signal sound level is too low to be heard and indicator lamps too dim to be seen. I installed a larger 35Ω rectangular speaker behind Adaptive Speed Control and Valet switch holes on underscuttle to better direct sound at driver. Use a new Aspirator Grille GJA6100AA___ (add three-letter interior color code) to fill empty Valet switch hole. I still wish I could get greater volume, but I've found the circuit too 'load sensitive' to get an amplifier stage to work without oscillating.

Inevitably, as your Jaguar racks up miles, you will get a "Check Rear Lights" alert. If this is the only message you get, check rear lamps IN THE DARK to ensure that they ALL are working, including middle redundant tail lamps. If you get both a "Check Rear Lights" and "Cruise [Control] not Available" alert, the cause is likely a faulty BPP switch. You can replace internal micro switches for much less money, IF you can find them. They are Cherry DK1G-SND1. As they get flakey with age, their irrational outputs confuse ECM. Cherry claims an electrical life of 100,000 operations. Ref TSB 206-07.

BPP assembly consists of a switch module attached to a steel bracket. To access it, remove driver's seat and dash underscuttle, then lie on your back. Keep fasteners, but discard new bracket if existing is in good condition. Leave original bracket attached to firewall (loosening mounting nuts inside firewall compartment may be helpful, but DO NOT remove them or you will spend hours trying to get bracket back into mounting holes). Ensure that ratcheting self-adjuster on new switch module is cocked as shown, so inner pawl (6:30 position in photo below) rests against its stop. You'll need a short handled ¼" square drive ratchet, 8mm socket and dykes.

1. Reach up through insulation blanket
2. Find and unplug cable connector
3. Cut zip tie
4. Remove lower nut
5. Depress and hold brake pedal (starting engine can get pedal to initially go lower)
6. Lift BPP switch clear of lower stud
7. Slide BPP switch down and out of top mount
8. Again, depress and hold pedal
9. Fit new BPP switch into bracket top mount and over lower stud
10. Release and pull pedal all the way to stop to allow ratchet to self-adjust
11. Install lower nut and tighten
12. Install zip tie and plug in connector.

Soldered connections can become unreliable due to poor original workmanship or removal of Lead (Pb) from solder as a result of Restriction of Hazardous Substances (RoHS) efforts worldwide. Pb in soft soldered joints made them ductile and less prone to cyclic stress fatigue. Pure Tin (Sn) solder joints are made at temperatures 60°F greater than eutectic solders and can fail abruptly when mechanically overstressed. This is not generally a problem for most protected modules in cabin, but those in tough thermal and vibration environments (like engine bay) are at risk.

Lack of trained diagnostic personnel has led to a module replacement mentality (at high cost to consumer) vs rework/repair of obvious damage. You can send some modules to specialists like www.modulemaster.com for refurb or as core credit. If you can do basic troubleshooting, inspection, rework and soldering, you can potentially save big bucks by repairing any obvious damage to module(s) yourself.

Some modern auto wiring has Soy-based insulation as part of Global Green Initiatives and rodents can dine on it. This is a growing potential issue for all newer cars, even Jaguars. I use Tesa wire loom tape instead of black vinyl electrical tape for tying up wiring. Color coding is abbreviated as follows in diagrams and manuals.

B = Black	G = Green	K = pinK
LG = Light Green	LN = Light browN	LU = Light blUe
N = browN	O = Orange	P = Purple (Violet)
R = Red	S = Slate (Gray)	U = blUe
W = White	Y = Yellow	

NW = browN with a White tracer/stripe. More info can be found at www.jcna.com/library/tech/tech0014.html

Molded plastic automotive connector housings degrade due to engine bay heat and age, eventually needing replacement, particularly those near the engine and top of engine bay. If you have release tools and know how to unpin them, you can replace housings without having to cut and graft prewired pigtails into existing harness. Latches on molded housings often break first, but contacts will still be fine. Not all housings have easily identifiable contact well numbering, so ensure you identify Position #1 and/or take a photo prior to disassembly. See the FordTechMakuloco YouTube channel video explaining how to unpin Ford type connectors. Magnification and good lighting are key here, otherwise you WILL break locking barbs. www.bmotorsports.com sells housings w/contacts or you can often find pigtails more easily and just unpin them. Go to 'Connector Kit Quick Search' and locate the connector you need based on total number of contacts.

Security and Horns

Key remote takes a CR2032 battery and directions for replacement are in Driver's Handbook. Changing it DOES NOT require reprogramming, provided you don't push any buttons while battery is out. Remote is LJE2610AC purchased from www.keylessentryremotefob.com and programming steps are:

1. OPEN driver's door
2. PULL and HOLD high beam stalk AFT
3. Insert and TURN Ignition key to AUX/ACC (Position I)
4. RELEASE high beam stalk
5. PULL high beam stalk AFT and RELEASE 4 times
6. Chime sounds and lamp illuminates on shifter surround, indicating entering programming mode
7. Press LOCK or UNLOCK on remote 5 times
   If two remotes, press twice on one and thrice on the other
   If more than two remotes, total of all presses must equal 5
8. Chime sounds and lamp illuminates on shifter surround, indicating exiting programming mode
9. TURN Ignition key OFF (Position 0)
10. TEST all remote key functions

An Inertia Cutoff Switch tucked up behind kick panel just forward of bonnet release shuts off fuel and opens door locks during an impact sufficient to trip it. Reset only when it is safe to do so. If this does not restore power, it is possible that High Power Module fuses (2X 250A fuses) in boot need replacement. If you wish to confirm body VIN against ECM VIN, put key in ignition, then hold down the A/B button on trip reset panel until the last digits of the VIN appear on the status panel.

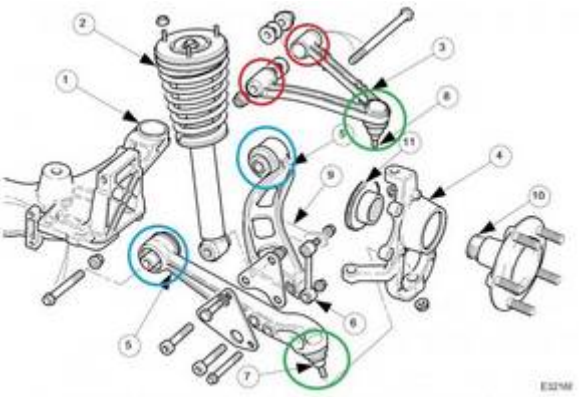
At 131Kmi, my 500Hz Fiamm horn went tango uniform for no apparent reason. After a bit of research, I bought Ford part 9L3Z-13832-A with two brand new horns on Amazon and saved a ton over the Jaguar equivalent.

Suspension
Jaguar's independent suspension design has long been among the most prized of the marque's traits. It relies on double wishbones up front and control arm layout at rear. To prevent road surface noise and vibration from reaching cabin, suspension components are not attached directly to body. Inboard ends of upper and lower wishbones attach to a very light but rigid cast Aluminum front cross-member. Suspension arm bushings are tuned to provide a proper degree of compliance when subjected to cornering loads. Forward portion of engine's weight is carried by tuned hydraulic (oil filled) motor mounts attached directly to cross-member. Bolts attaching rubber mounted cross-member to frame can seize in situ after years of galvanic action and if you do manage to get them out, they need to be replaced and anti-seize compound applied prior to reassembly.

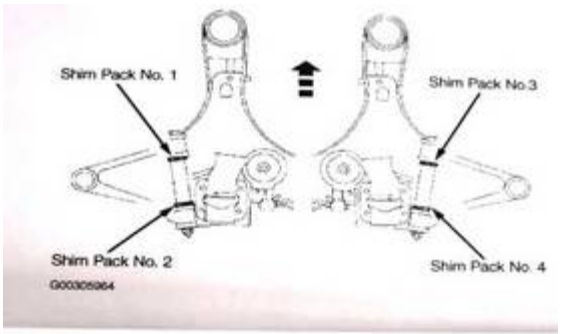
Despite good design and progressive springs up front, low speeds produce a harsh ride over road surfaces such as brick or cobblestone and more so as components age. Anti-roll bar bushings are simple to replace from above, taking ~30min. I use Powerflex anti-roll bar and upper wishbone bushings lubed well with Prothane Super Grease so they won't squeak. Ref TSB 204-16.

For our purposes here, Caster is always positive, Camber negative and Toe in. Pay close attention to Caster adjustment shims when changing upper wishbone bushings. Default shim location from Jaguar is shown below. Positive Caster tips vertical link axis backwards (like a motorcycle fork) for stability and Jaguar suggests a nominal 6.6º left and 7.3º right for North America. If your car drifts off low side of sloped road surfaces and your toe is set correctly, you need more Caster on low side (or less Caster on high side).

Four Stepped Washers CAC3533, two .063" [1.6mm] Blue Shims MJA1467AA and two .035" [0.9mm] Red Shims MJA1467BA are used each side, but are arranged differently. Blue shims affect Caster by 0.4º and Red shims by 0.2º. If you install new bushings with flush ends unlike OE, supplied large pattern flat washers must be used instead of stepped washers. Brake line mounts foul large washers during bolt removal and should be bent down or kissed off slightly to clear. Upper wishbones theoretically provide fixed Camber of ~1º, but an eccentric bolt JZB100086 is available for lower aft wishbone if needed. A radial ridge on bolt head skirt indicates peak of eccentric lobe. To change out this bolt, steering rack must be dropped slightly. A rough Camber check can be made using a smartphone running a Clinometer app with car parked on any reasonably level surface. My right front had excessive Camber causing abnormal tire wear on inside edge, so I installed the eccentric bolt to adjust it out. Total Toe in should be ~0.25º.



Front coil-over upper mount rubber isolator doughnuts dry out and take a compression set over time. Improved OE parts are around $190 a pair and Welsh makes a nice urethane version. Ensure you can get upper shock shaft end nut loose using a Great Neck 25284 socket. This portion of the shaft can just twist off if original nuts were over-torqued and a carbide disc is often needed to slice nut. Changing out a front coil-over takes ~90min. You will need a set of spring compressors, some ratchet straps and a bench vise to further compress and stabilize shock respectively while working on it. Nut covers omitted on later cars are NJA3975AB large and NJD3975AB small. Shaft bump stops rot out and need replacement. Front Shocks are Bilstein new P/N 24-067263.

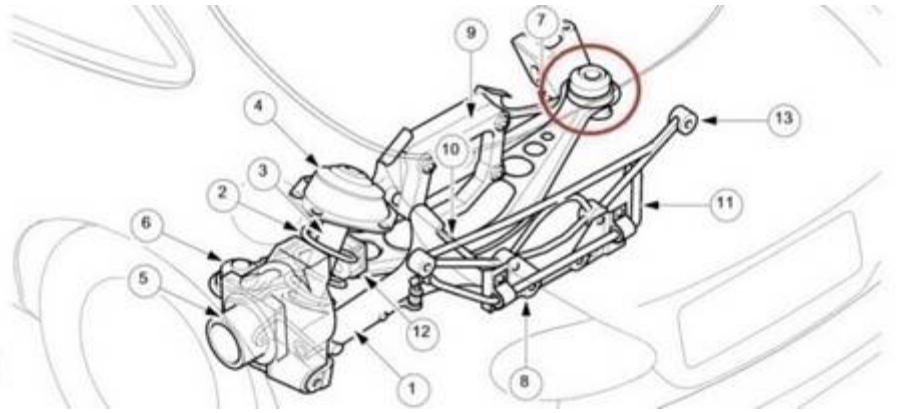


Shim Pack Application (1)

Application (2)	Contents
Shim Pack No. 1, Left Front	2 Thick, 1 Thin Shim
Shim Pack No. 2, Left Rear	1 Thin Shim
Shim Pack No. 3, Right Front	1 Thin Shim
Shim Pack No. 4, Right Rear	2 Thick, 1 Thin Shim

Front wheel bearings are robust sealed double cartridge types, greased for life. DIY replacement is possible, although most folks replace entire spindles (Find No. 4 in above line drawing) rather than wrestle bearings out. A YouTube video shows front end job being done by a couple of Yahoos using common tools.

The rear suspension reduces natural tendency to squat under acceleration, utilizing a control arm design. Springs are seated directly on transverse lower wishbone, not shocks, which reduces friction for better ride comfort and noise isolation. Half-shafts serve as upper suspension links. Jaguar sets rear Camber at ~1º and a nominal Toe of 0.16º each side. Rear Camber is adjusted by changing half-shaft spacer/shim, with each 0.5mm change being 0.1°. P/Ns are in the form CBC480635 with last two digits indicating shim thickness. Shims from 3.5mm to 7.5mm are ~$50 each, so it's best to measure what you have and proceed accordingly. Rear Shocks are Bilstein new P/N 24-067270.



Entire rear suspension sits on a stamped steel crossmember bolted to body through elastomeric bushings tuned to isolate road harshness. In addition, lower control arm pivots allow some rearward deflection when subjected to sharp impact like a pothole or bump. Anti-roll bar and drop-link bushings are simple to replace from underneath, taking ~30min. Due to limited space, a slim spring compressor like Sir Tools ST9050 is needed to remove/replace rear shocks. Rear wheel outer and inner bearings are not sealed and likely need replacement around 200Kmi.

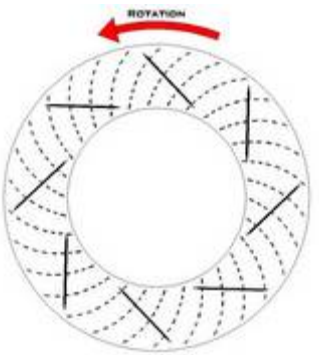
I prefer to jack each front corner by positioning jack cup over side X-brace bolt just behind front wheel arch, although front end can be safely raised by bearing on Steel cross beam directly beneath radiator. Place a 2"x4"x18" wood block on jack cup to provide bearing surface. Rear end can be safely raised bearing on bolt heads at rear center X-brace anchor points.

Steering
Power assisted rack and pinion steering uses ZF Servotronic components. Jaguar's system has speed-sensitive variable power assist and variable rack ratio, delivering full hydraulic boost at low speeds for easy parking with assist lessening as speed rises to give a well-weighted, confident feel to at highway speeds. Due to high assist at low speeds and wide front tires, driving slowly on scalloped road surfaces results in a bit of tramlining, but you can't have it both ways. While less sophisticated systems provide variable assist by cutting flow of fluid to steering rack itself, their effectiveness is hampered by a need to maintain sufficient flow for emergency evasive maneuvers at high speeds. To further refine steering feel during straight-ahead highway driving, steering gear valve incorporates a positive center feel torsion bar. Torsion bar twists slightly in operation, effectively programming an on-center position at small steering angles, improving stability in conditions such as crosswinds. When steering wheel angle exceeds a predetermined amount, torsion bar reaches end of its travel and control of assist levels is assumed by Servotronic system. Steering rack rate increases as limits of wheel travel left and right are approached. This makes parking less tedious, yet provides appropriate levels of assist — not overly sensitive to slight steering wheel movement — for good stability at highway speeds.

Column tilt/reach motors/drives don't always cycle properly and noise indicates a need for spray lithium grease, usually on the tilt drive. Motors are driven to their programmed positions or to stall limits with controller sensing this and powering them down. My memory positions are set full out/full down. Reach drive uses a short cable (like used for headrests) to turn a threaded shaft, and it eventually fatigues if always driven to limit. It is available from Coventry West as JLM12187cable. I did the following to get them to cycle as reliably as they can:

1. Drop underscuttle to access steering column lower reach motor
2. Cut White/blUe wire on connector going to motor
3. Solder in a 2.7KΩ series resistor and sleeve/tape
4. Reassemble and set column movement switch ON
5. Hit memory buttons to reactivate circuit and reset memory positions
6. Lift will now be shortly followed by retract

Brakes
Ate (Continental/Teves) MK25 4-channel Dynamic Stability Control (DSC) unit in a split front-rear arrangement is used along with their tandem servo/booster 03.7848-1801.4 and single pot calipers. The system is equipped with Emergency Brake Assist (EBA) so, if in an emergency driver has not applied maximum braking effort, system will assist. Even with all of these good features, I still find this particular system somewhat anemic for a two-ton car. I would prefer to be able to stop 60 to 0mph in less than 100ft, so someday I may upgrade to XKR brakes. I have currently settled on Centric Power Stop drilled and slotted discs with their ceramic pads and Goodridge braided fluid lines. Limits on rotor wear are 26mm front and 18.5mm rear. Relube caliper pins with high temperature ceramic grease or silicone paste. The system takes DOT4 fluid and I pressure bleed in accordance with JTIS recommended LF, RF, LR, RR sequence. If you have directional rotors, ensure slots and especially internal vanes face correct direction, drawing air in from hub and exhausting it at periphery.



Wheel speed sensors are conventional variable reluctance types connected to main harness by short link cables. Front link cables get flakey because steering flexes them so much. I felt a shudder in brake pedal and the system threw DTCs C1155 and C1233 when left front link cable became intermittent at 100Kmi and right front went shortly thereafter.

Fuses F4, F16 and F18 in Engine Compartment Fuse Box supplying power to DSC unit are covered with orange plastic caps to prevent their mistaken removal leading to a braking/safety issue. All connections from DSC unit to hydraulic block are inductive, so it just unscrews, but XK8 hard lines are formed downwards, making it impossible to remove unit without draining and undoing them. Harness connector has a sliding latch that must be pried out from end to unmate.

DSC requires all wheel speed sensors and pressure switches to be functional or system shuts down and turns on ABS warning lamp. Very badly worn wheel bearings can lead wheel sensors to produce anomalous outputs, confusing the system and may cause transmission shifting issues. If you start to get strange transmission behavior, check bearing play at all wheels first. Circuit board solder joint fractures within DSC box have occurred, with system throwing DTC C1095. The problem is easily rectified by hole-sawing a Ø1" opening into notched corner of cover to gain access to large pin solder joints most prone to stress cracking, and resoldering using 63Tin(Sn)/37Lead(Pb) solder. Then just RTV in a plastic plug.

DSC reduces torque to wheels by controlling throttle position, ignition timing and fuel supply. Automatic Stability Control (ASC) is operational at all speeds to enhance traction in slippery conditions. When wheel spin is detected, antilock electronic control module calculates engine torque that won't cause tires to slip, based on information from vehicle's Controller Area Network (CAN). First, throttle angle is reduced, but because the effect is not instantaneous, ignition timing is retarded and fuel to cylinders cut off until proper throttle position is reached. Both systems may be manually switched OFF to power out of deep snow or when using tire chains.

Wheels/Tires

Jaguar should have Zinc plated their wheel hubs, as they become quite a rusty mess after only a few years of trapped moisture. I did my first brake job at 100Kmi, but wished I'd done it sooner, because rust made rotors really difficult to get off. Use WD40 Rust Penetrant spray and a rotor puller as needed. Before reassembly, hit hubs with a wire brush and give them a light coat of Rustoleum or Noxudol. Wheels are hub-centric, so grease centering bosses to keep them from sticking to hubs and put a drop of oil on studs. Two-piece lug nuts (nut with crimped-on dress cap) can spin or come apart, so ensure you can get them off when you need to.

Extra room for wider tires and/or wheels with greater offset is provided in wheel arches. Once you have settled on wheels and tires you like, you should optimize track. Increasing track improves both handling and aerodynamics. 20mm thick H&R 4085738 hub centric wheel spacers worked well for me and don't noticeably affect tramlining, unless ball joints are worn out.

OE chrome wheels can experience plating separation over time, leading to slow escape of air from tire bead seating area. Ref TSB 204-06. You need your tire shop to inspect plating in this area during tire mounting and advise you, **however this is a bad time to find out you need a new wheel**. Another way of assessing this condition is to examine perimeter of center growler cap. If you see chrome separating (a raised area) in this region, then chrome in tire bead seating area is likely compromised. Newer plated wheels do not have this problem and may be recognized by gray epoxy paint instead of chrome plating in bead seating areas. Low profile tires make wheels prone to curb rash if you are careless. If you need to buy new or refurbished wheels, some styles in the Hollander Catalog may still be available, but every year more are getting harder to come by. There are specialty shops capable of straightening bent wheels, fixing scuffs and replating or powder coating if needed.

I run 32psig in all four tires. During rebalancing, ensure your tire shop removes balance weight adhesive residue and crap from your wheels using a wire brush before attaching new weights or they can easily sling off. Also ensure they pay attention to High or Heavy Spot markings when mounting new tires. Ref TSB 204-18. Be aware that Lead (Pb) weights were discontinued in 2011 as part of Global Green Initiatives and three times as many Iron/Steel (Fe) or Zinc (Zn) weights are now needed do the same job. OE wheel and engine cover growler badges supplied on my car were pretty cheesy. Nicer looking replacements MNA6249AB are available, and there are colors other than British Racing green if you prefer.

I like Michelin Super Sport PS4 tires over the competition. Whatever you put on, front set will generally last twice as long as rear. Remote pressure sensing devices are available to retrofit to your wheels, but there are also inexpensive direct indicating caps on Amazon.

Windscreen, Washers/Wipers

Wipers are 21" and have tubing running to arm mounted nozzles. Passenger wiper shaft is in an area where bonnet trailing edge creates lift (like blowing across an open bottle). The longer you drive fast (>90mph), the more it wants to suck cap GJA8966AB right off, so use a little Gorilla Glue on it. Nut and shaft will rust due to trapped moisture, so give it a shot of Noxudol and replace Steel nut with Stainless-Steel. I use PIAA Aero Vogue Silicone wiper blade assemblies because they adjust to changing curves of windshield (parked vs in motion) better than do beam blades.

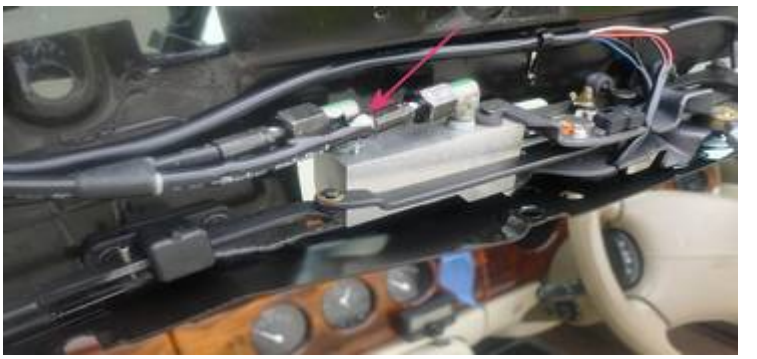
Windshield underscuttle attaches with 8 screws and black plastic shoulder washers that fall out from underneath, never to be seen again. I use black PA countersunk washers as suitable topside replacements. Ensure wiper shaft rubber seals are in place and rubber drain pipes within Firewall Bulkheads are on nipples and retained by their hooks or water can drain into enclosures leading to corrosion. Along front edge of the underscuttle runs a transverse bonnet seal that comes loose over time.

The windshield GJF8801BC (Fuyao FW02363 GTN) on my car has both rain and light sensor apertures. Twelve 70mm GJB8812AA and two 35mm GJB8812BA plastic glazing strips are needed, as they are incorporated in adhesive. Rain sensor gel pad LJD3850AA and eight plastic windshield underscuttle anchor nuts XR82312 also require replacement. To release the mirror from the window shoe, remove the plastic trim pieces and knock it forward and down with the heal of your hand. When reinstalling, ensure rearview mirror is secured so you don't get image jiggle. Spring clip is riveted to mirror foot, gets loose over time and I tightened/stabilized mine with some JB Weld. Test rain sensor to ensure that it and/or gel pad have not been damaged. Rain sensor has a somewhat dodgy service history, with many owners deciding it's just not worth the effort.

Washer fluid system lower filler neck-to-reservoir joint is a poor fit and can lead to leaking as rubber grommet dries out over time. Repair as follows:

1. Remove unit from left front wheel arch
2. Disassemble reservoir to filler neck joint
3. Remove large rubber grommet
4. Clean everything in vicinity of joint well with Isopropyl Alcohol
5. Butter up grommet outside and inside with Fusion brand urethane adhesive
6. Reassemble grommet, neck and reservoir
7. Reinstall and allow to cure in situ.

Washer fluid not containing sufficient alcohol (Methanol was removed from most to render them less toxic) can foster bacteria growth in warm to hot conditions and Legionella bacteria specifically can be spread as mixture is aerosolized during use. Add 2 to 3 cups of isopropyl or denatured alcohol per gallon to fortify, cut road grime better and improve resistance to freezing during winter. More alcohol does everything better, but may degrade blades and paint if excessive amounts are used.



Convertible Soft Top

Soft top fabric and liner are attached to a folding aluminum framework engineered to provide a low stack height. Due to rear space needed for stowage of soft top and actuating mechanism, rear seat back is more upright and seat can barely hold a small dog. Operation is by momentary rocker switch on center console while traveling <10mph. Latching, unlatching and window operation are all automatically sequenced, but you must hold switch button down continuously until cycle completion. When using door key method to lower top, door windows are driven fully down. Benign creaking noises come from soft top latching sockets as body flexes over bumps.

Erection cylinders are located outboard of rear seat back behind reinforcing bars and speakers. Right-side cylinder has actuating/limit switches and it's possible for control system to get hopelessly confused if it doesn't get switched levels in correct sequence. I had the system refuse to budge once, but it reset itself after another ignition key cycle. Some have had top brackets work loose from erection cylinders.

Pentosin CHF11S green synthetic fluid must be used (early models used a brown fluid that gelled in lines over time). Soft Top hydraulics are driven by a PowerPacker brand pump spiking to 1600psig. OE hoses will eventually degrade, leading to the dreaded "Jaguar Green Shower". Three hacks have emerged in valiant attempts to solve this issue; (1) The two 0.1Ω 50W series resistors voltage dropping method, (2) The LSI pressure relief valve method, and (3) The Dennis White pump internal spring tension reduction method. Even with a reduction in peak pressure, crappy black PVC jacketed OE hoses deteriorate, resulting in end fitting crimp failure. It is not a matter of IF, just a matter of WHEN it will happen. System pressure and the ambient heat your car sees over time ARE contributing factors. A drop of green fluid hanging from overhead console grating or on your shifter surround are signs to take immediate action.

Much higher quality hoses of smaller diameter rated for >20,000psig and other soft top components regardless of brand are available from www.tophydraulicsinc.com. Hose replacement is tedious, but not difficult, taking ~8hrs (I did it leisurely over four days). DIY will save you BIG bucks. You will need to replace left door tread plate fascia and top off fluid, but pretty much everything else is reused. Marvin Johnson at http://jaguartoprepair.com/ www.jaguartoprepair.com travels about in the US doing this job in one day for ~⅓ of the going price.

www.jagwrangler.com has a spiffy modification that installs in driver's door allowing remote control of soft top using headlamp button on your remote. My understanding is that replacing soft top liner is a one man-day job, although I have not yet done it.

Interior
Separate headrest OE seats were a poor choice for this car and, though adequate for freeway driving, they fail big time in cornering. Seat bolsters are not shaped to cup your bum or upper body, so you end up slip sliding away in turns. There is a fix that adds clips on seat risers to reduce end float. Ref TSB 910-07a. Seat control modules mount under front of seat base, and after years of seat flexing, their lids can crack badly. A replacement lid/cover C2N3565 is available. Ref TSB 419-17. When replacing these, it may be a good idea to put rubber washers between lid and bracket, use Loctite 222 on studs and only tighten nuts snug. Transfer label containing programming info from old cover to case. Range of seat motion is limited for long legged drivers, only going back as far as rear seat bolster allows. There is just enough room in front footwells for my size 12s. With top up, there is little headroom and I'm 6'2" with an extra lumbar vertebra. I have seat base fully down both front and back and well reclined.

Headrest drive cables can be troublesome, but fellow Pastafarian Reverend Sam, made TSB 501-58 into a YouTube video, describing shortening drive cable sheath to allow cable to fully engage drive spindles. Pull internal cable out, use a Dremel tool with a carbide cutting disc to girdle sheath near the center and use a good quality Ø½" semirigid heat shrink tubing having a meltable adhesive inner wall (M23053/4-105-0) to rejoin it and this fix will last forever. An alternative is to get longer tach drive internal cables.

Headrest drop is controlled by a micro switch on each seat frame. Release lever allows seat back to tilt forward, releasing micro switch to trigger headrest retraction. When seat back is returned to normal position, headrest should resume its preprogrammed position. The micro switches are snapped onto seat frames facing driveshaft tunnel and can be easily knocked out of alignment during vacuuming of interior. Micro switch leaf needs to squarely contact frame edge to actuate. If your latch pin sleeves have broken up, press some of the same tubing used for the smooth bore breather pipes over shanks and reinstall using Loctite 242. Just **make absolutely sure** seat latch fully engages and locks onto your now slightly greater diameter shanks. Chase latch out with a Dremel sanding drum as necessary. Driver's seat lumbar bladder was positioned wrong for my back but was easily remedied by changing zip tied height of bladder relative to its rubber mounting web.

The cup holder is completely laughable and easily broken, but a rebuild kit GNA7692AB is available. Ref TSB 501-06. Center console armrest cover foam gets compressed, leather starts to ripple and begins to look shoddy. Crosslinked polyethylene or EVA foam is what you want to use. Sam's got this and some other DIY activities covered in YouTube videos too.

Weatherstripping around doors can split where front of window glass exits above exterior mirror and at rear just above door latch. Replacement cost is significant and installation laborious. Instead, at front, trim off split sharp corner and smooth it into a more rounded shape with a Dremel sanding drum. For aft split, get Permatex 80338 Black Rubber Sealant and thin it with Toluene as necessary. Clean and scrub repair area well using Acetone, a Scotchbrite pad or Dremel sanding drum to get any release agents off and give surface some key/tooth. Tape back side of any split areas together before you start. Using an acid brush or airbrush, apply sealant in multiple thin wet coats until satisfied with the result.

There are small "rubber edging" bumpers inside the doors keeping glass from rattling and they wear out over time. Window track adjustment screws are hidden behind puddle lamps and speaker grilles. Rear quarter glass adjustments are far less accessible and should only be made after front glass has been set correctly. Rear quarter glass leading edge rubber doesn't always seal well with trailing edge of door glass, leading to some wind noise and mounting holes don't always allow for enough adjustment. Ref TSB 501-52. Lube window tracks with 3M Silicone Paste as needed. Door card upper casing brackets often break as a result of slammed doors and are easily replaced. Ref TSB 501-57. Door latch internal micro switch contacts degrade over time. If your driver's door repeatedly fails to bump glass back up upon door closure and you know your battery is strong, it may be time for a new switch C2N1908. Ref TSB 501-54. If both doors are doing this, it is more likely your battery is weak. Weak batteries tend to show up more in winter.

Door handle gaskets JLM12031GSK AND JLM12032GSK will crack due to years of UV exposure. MTC brand are made of a different plastic and don't fit as well as OE parts. Replacement is ~45min job each side. Two bolts with 7mm hex heads retain assembly from inside. Pawl/arm is a snap fit on lower ball mount. Door check arm bracket can loosen at door jamb creating a snapping sound. Remove bolt, reinstall using Loctite 242 and torque ~5ft-lb [60in-lb].

I like dash mats in my cars and Cover King makes a nice velour one. Having a dash mat fly up in your face on a convertible at speed would be bad, so use Gorilla Glue to bond Velcro anchors down. Vanity mirror lamps are not wired through their hinges, so they only work with visors stowed in their clips. Were my car not a convertible, I would install a dash cam.

Restraints

No portion of SRS system operates ignition OFF, so if you intend to remain in car parked along roadside, keep ignition ON. After ignition switch ON, number of blinks SRS lamp makes before steady ON indicates problem code (Example: one blink, pause, then three blinks indicates 13, it then repeats).

13 - Crash data memory full
16 - Seat weight sensor CAN fault – passenger seat
17 - Spatial sensor CAN fault – passenger seat
18 - Airbag deactivate lamp circuit fault – passenger seat
19 - Airbag circuit status fault – driver side
21 - Airbag circuit status fault – passenger side
22 - Side Airbag circuit fault – driver side
23 - Side Airbag circuit fault – passenger side
33 - Seat Belt Pretension fault – driver side
34 - Seat Belt Pretension fault – passenger side
42 - Impact sensor circuit fault – front
43 - Impact sensor circuit fault – driver side
44 - Impact sensor circuit fault – passenger side
51 - Seat belt switch circuit fault – driver side
52 - Seat belt switch circuit fault – passenger side
53 - Airbag audible warning circuit fault
54 - RCM configuration failure

Onboard active restraint system constantly assesses cabin occupancy to optimize deployment of airbags. Dual seat bolster airbags for both driver and passenger are provided, along with MP853A type seatbelt pretensioners and clocksprings to take up slack at impact. The mostly black w/yellow insert connectors used on airbags and clocksprings are available from www.myairbags.com for a few dollars. A Steel blade moves through a Hall Effect Sensor installed under driver's seat during forward and aft seat adjustment. This tells Restraint Control Module if seat is too close to steering wheel and disables second stage output to airbag, reducing chances of injury that might occur by full force deployment at close range All squib connections have shunting features/clips to render them safe when disconnected by shorting the two contacts together, so static discharge won't set them off unintentionally. Some connectors have built-in ferrite beads to block voltage spikes. All connectors have Gold plated contacts to ensure low resistance or an SRS fault will be detected at startup.

Honeycomb boot floor has two positions. If you have a full-size spare tire, upper position gives a flat floor all the way across. If you have a space-saver spare, lower position gives you more depth in the center.

Climate Control

Heater matrix 'octopus' hose is a known problem area. This hose directs a portion of engine coolant to heater core via a Control Valve and Aux Electric Pump. Check Valves (one in octopus hose and one in heater core outlet line) prevent backflow. IMO Jaguar engineers should not have located the Norma Push and Seal R20 plastic connector on supply side where they did, as it broils between heat from Bank-1 catalyst and EGR pipe, degrading internal O-ring. Initially an occasional coolant drip just boils away on catalytic converter, leaving no trace. You may smell coolant when you shut down engine, but never find a puddle. Pressure testing cold at 14.5psig (1bar) for several hours with a clean dry shop towel placed under connector can identify this problem. Internal O-ring seal is an odd French R-16 size (19.8mmID x 3.6mmCS) if hose and connector are otherwise in good condition. AS568-211 (.796"ID x .139"CS) seal in Viton is probably an acceptable sub.
Releasing Norma connectors is not complicated, but if you break either of them, the 'octopus' hose will require a few tedious hours to replace. Engine heat makes PA66 brittle over time and warming lessens likelihood of breakage. Place a tub under area. For supply side connector, merely push down on ribbed tab, rock it back and forth slightly, while sliding tab and sleeve back TOWARD hose. Once fully retracted, grip hose, rock it firmly back and forth, pulling until released from outlet pipe AJ83928. While you have it apart, ensure pipe is absolutely clean and smooth or IT WILL LEAK. A short piece of firesleeve 7569K16 from McMaster-Carr placed over hose before reassembly will provide some future protection. Lime green shipping collar on new hose connector is discarded after mating. Return side Norma connector is different and requires prying two barbs apart while separating. Heater core outlet hose is intentionally flattened in the sharp bend.

Service life of Auxiliary Pump brushes is around 120Kmi, as it runs anytime ignition is ON. Binding of impeller against divider plate can occur and motor rotation doesn't necessarily mean magnetically coupled impeller is actually pumping. Impeller axle should be just slightly longer than impeller to prevent binding. Eurton Electric 33E brushes fit if you shorten them by .150". YELLOW wire is +12VDC. There is just enough room to remove firewall shock mounted valve and pump bracket from engine bay. Two nuts and two bolts underneath and two nuts at top need to be removed first. As long as you have motor apart, verify flyback diode has >10:1 front-to-back ratio. Heater core should be backflushed with fresh water at a safe 14.5psig (1bar). Shorter tube is heater core outlet. When power is applied to control valve, it closes. Failure mode of control valve is sticking either open or closed.

Climate Control System has an internal diagnostic mode. Begin with Key IN, Ignition OFF (Position 0):

1. Press/Hold RECIRC and AUTO buttons, START engine, then release. Display will flash. Verify all display elements are functional.
2. Press AUTO button to read code. If Zero, there are no stored fault codes. For a list, see Jaguar Forum.
3. Press FACE button to scroll through any remaining codes.
4. Press FACE and HEATED REAR WINDOW buttons together to clear each fault code in turn.
5. Press RECIRC to perform actuator check.
6. Press FAN/OFF button to exit diagnostic mode.

The most common fault is 11. On driver's side underscuttle close to console a little grille hides a thermistor and aspirator/blower for climate control system to reference. Take it apart and power up blower to ensure it still works. Clean thermistor with Isopropyl Alcohol and reassemble.

A/C is conventional and low pressure charging port is up near firewall. Always hold refrigerant can upright (and agitate) to introduce just R134a vapor/gas into line (not liquid) or you can damage compressor seals. Newer non-piercing auto shut-off cans require a DVA1 adapter.

Engine Bay Heat Soak

There is barely room to access system components because engine bay is largely full of, well…engine. Heat degrades most things including electronic components, rubber and plastic, so needs to be forcibly ejected. Engine bay runs slightly above ambient temperature while driving, but quickly rises above 200°F at shutdown, staying quite high for almost an hour. Since heat rises, greater thermal damage is expected in items nearest engine and top of engine bay. In my opinion all bonnets should have had louvers like XKRs, an electric pump and one fan set to run for several minutes after shutdown to help combat heat trapping tendency. When engine is first started cold, fans don't run at all, run slowly (in series) when thermostat opens at 190°F, and run full speed (in parallel) around 204°F or with A/C ON.

Cleaning/Protection

Keep all hoses, and for that matter all rubber items (except serpentine belt), well coated with silicone spray for longest life. I use CRC 03040 (Fastenal carries it) for large area coverage and Easy Rider RT630A for coating small bushings, because it is thicker.

If your car is a daily freeway driver, XPel protective film should be applied to protect front end from road FOD. Chrome exterior mirror cover finishers are available since painted ones eventually suffer from road rash. I never liked the bucky beaver teeth covering bumper energy absorbing aluminum extrusions or chrome splitter vane in grille opening, so I removed them.

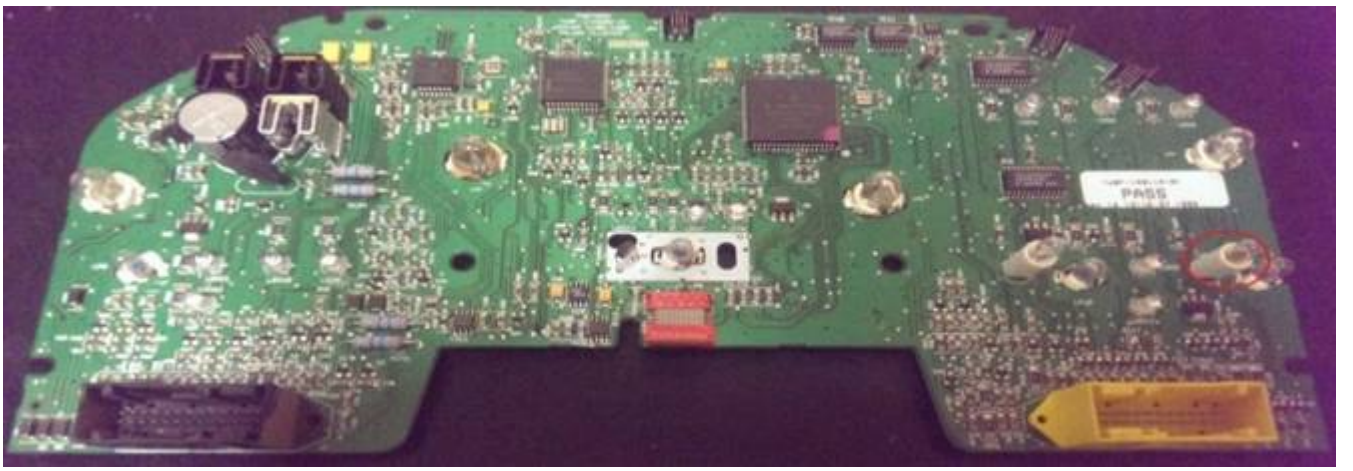
Cable trough along left side of engine bay, plastic rocker panel covers where they undershoot wheel arches and front splash guard all tend to fill with road debris and should be power washed regularly.

I use Armorall leather wipes to clean, then Surf City Garage Voodoo Blend Rejuvenator to treat leather. Outboard cording on driver's seat bolster and surrounding area will get rubbed raw by your bum long before any other leather surface wear is evident. Leather Colourant restorative dye from Furniture Clinic can fix surface flaws and worn areas. New seat skins are available from GAHH and www.topsonline.com.

Noxudol 750 anti-corrosion cavity wax should be applied on and/or into all places subject to moisture ingress you can get to with included snaky hose. Remove plastic front wheel arch liners for access and apply wax in these areas too. If you can get car up on a lift, look for lower areas prone to road salt or rusting and apply it (just don't get it on braking surfaces or items that must move freely without binding). Steering linkage U-joint knuckle in particular has a tendency to rust badly, so wax it regularly. Other protectants may be needed depending on prevailing climate and where your car is stored.

For soft top external cleaning and protection, I use Raggtopp once a year. I use a little foam ended makeup/touchup brushes to fill paint dings and a Meguiar's K2000 Mirror Glaze Unigrit sanding block to dress and level. Before using, soak sanding block in water for a day until it sinks. Instead of clay, I use a synthetic clay pad, a Porter Cable 7424XP DA for cutting, P21S wax and a rotary for polishing. For tire sidewalls, I use Lemon Pledge.

Lighting
Halogen headlamps are okay as long as you use the whitest H1 bulbs you can buy and adjust them for how low the car is in front. Headlamp lenses are prone to road FOD damage and non-safety glass, quite sharp if shattered. Use XPel protective film or you may soon be buying a $260 lens (left LJA4651BA, right LJA4650BA). Position and turn signal bulbs can be changed through the clear covered top ports. If you need to remove a front lamp fixture, one bolt is on the core support, one underneath and one nut on inside front. Unplug wiring and release automatic lamp washer tabs before removing.

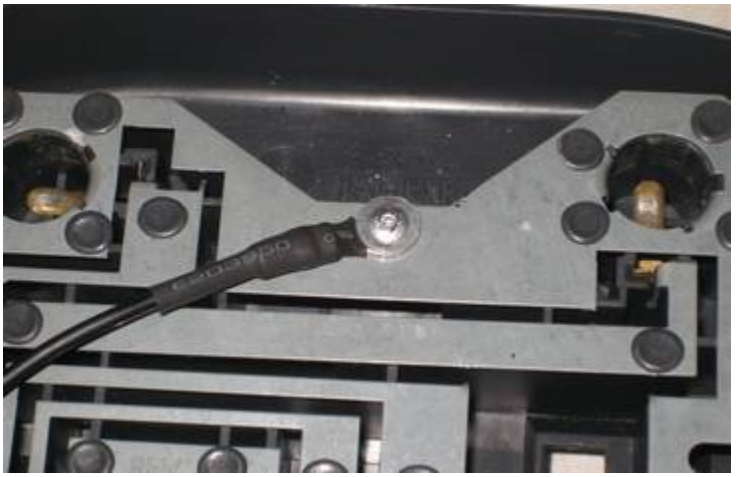


All bulb sockets on the XK8 are standard types (non-CK). Street Legal bulbs/LEDs range from 3000K (Warm White) through 6500K (Cool White), and I prefer 4500-5000K (Natural White) if available, otherwise Cool White. Some LED bulbs are polarity sensitive (directional in the socket), whereas Audew 4350379652 (2825/193 LED replacements) are not, plus they have a nice frosted lens. Their contacts are too flat and can benefit from putting a peak in them to capture in the socket better.

Some LED instrument bulbs may give inferior illumination and/or be undimmable without a Pulse Width Modulation (PWM) type dimmer. Jaguar provides a redundant center 2357 bulb powering only the 5W position filament. This can be swapped for a failed position/stop lamp. Adding a 3A rated diode from stop lamp circuit to fog lamp circuit allows fog lamps to double as redundant stop lamps. I have successfully replaced 1156, 2357, 2825, 6418, 6439 and 7507 bulbs with LEDs.

36mm Taben 4B-FB-009-36mm bright white LEDs work well for Vanity Mirrors but, since they are 8mm instead of 6.5mm in diameter, four aluminum tape reflectors inside each fixture need protecting with clear packing tape to prevent shorting and blowing driver's side fuse box F7 (15A). Glove Box lamp socket/switch on my car had +12VDC going to bulb base instead of tip and LED wouldn't illuminate until wiring was reversed.

Lamps indicated below in RED text are Failure Warning System "sensitive", with LED replacements likely needing 6Ω >50W resistor in parallel (even many supposedly CAN bus compliant types), otherwise they are sensed as open and/or can hyperflash, in the case of turn signals. The single GROUND contact in rear lamp units is marginal carrying total current (~10A) of all incandescent bulbs lit for long periods in hot ambient conditions. A separate wire connected from unit GROUND bus/trace to Chassis can solve this, but is unnecessary if converted to LEDs. Photo below is of early version fixture, but new units are similar.



Lamp Location/Function	Part Number	Bulb Description
• Front Fog (2)	H1 (Halogen)	55W (STR) projector
• Dipped (Low) Beam outer (2)	H1 (Halogen)	55W (STR) projector
• Instrument Cluster Large upper (4)	LJA4390BA (Incand)	3.36W 158 (T10 wedge) in PCB base
• Door/Window Switch Panel (2)	LNA5180CA (Incand)	0.7W BLUE (leaded bulb) in PCB base
• Instrument Cluster Small lower (4)	XR83865 (Incand)	1.12W E73 wedge in PCB base
• Reversing inner (2)	1156LL (Incand or LED)	27W (BA15s)
• Rear Fog inner (2)	1156LL (Incand or LED)	27W (BA15s)
• Rear Position/Stop outer (2)	2357LL (Incand or LED)	28W/8W (BAY15d)
• Aux Rear Position center (2)	2357LL (Incand or LED)	28W/8W (BAY15d)
• Door Puddle (2)	2825LL (Incand or LED)	5W (T10 wedge)
• Front Position (2)	2825LL (Incand or LED)	5W (T10 wedge)
• Front/Rear Side Marker (4)	2825LL (Incand or LED)	5W (T10 wedge)
• Interior Footwell (2)	2825LL (Incand or LED)	5W (T10 wedge)
• Interior Map (2)	2825LL (Incand or LED)	5W (T10 wedge)
• License Plate (2)	2825LL (Incand or LED)	5W (T10 wedge)
• Side Turn Signal (2)	2825LL (Incand or LED)	5W (T10 wedge)
• Glove Box (1)	3893 (Incand or LED)	4W (BA9s)
• Boot (2)	6418 (Incand or LED)	5W (SV8 festoon)
• Vanity Mirror (4)	6439 (Incand or LED)	3W (PLX festoon)
• Front/Rear Turn Signal (4)	7507LL (Incand or LED)	21W AMBER (BAU15s)
• Main (High) Beam inner (2)	9005 (Halogen)	65W (RA) reflector

OBD2

OBD2 will log Diagnostic Trouble Code (DTC) P1111 when all systems are “in the green”. If you have recently erased DTCs you may get DTC P1000, which prevents a Smog Check until you have driven sufficient cycles for all tests to again complete. JTIS Workshop Manual has applicable DTC listings at beginning of some chapters. Having a list of both Generic and Jaguar specific DTCs is helpful when you do get an illuminated MIL. My **Innova 3160e scanner** has an internal library of DTCs and can capture 12min of live data that can be uploaded to PC for graphing. Smartphone apps like Torque Pro and adapters like Carly allow for cordless monitoring of some OBD2 parameters.

Baseline scan your car's systems and capture live data driving at varying speeds when running right in order to know your normal range readings. Don't start replacing things on a single throw of a given DTC. Log it, erase it and monitor to track trends over time. Work to develop a good diagnostic sense, progressing in a logical manner to pinpoint a single malfunctioning item. Systems depend on each component doing their job(s) correctly and consistently. Attempt to correlate or isolate any DTC(s) to a given bank, then to a specific module and finally, if feasible, to a single component. Some items can be swapped between banks to see if the problem follows. The simplest answer to a problem is usually the correct one – often a failed sensor/module or a bad connection. Don't break other things while attempting to fix your original problem. Modern cars are designed and built for ease of assembly, not ease of repair, so disassemble as few things as possible and replace cheapest suspect item first.

Normal range OBD2 PIDs:
Fuel 1 (Open Loop KOEO, Closed Loop KOER after brief warm up)
Fuel 2 (Open Loop KOEO, Closed Loop KOER after brief warm up)
Load (0% KOEO, 0 to 100% KOER)
ECT (-30 to 230°F)
STFT B1 (0 ± 10%) lost at key OFF
LTFT B1 (0 ± 10%) retained at key OFF
STFT B2 (0 ± 10%) lost at key OFF
LTFT B2 (0 ± 10%) retained at key OFF
FP (54 to 70psi relative to MAP)
MAP at Idle (~11inHg)
RPM (0 to 6400rpm)
Speed (0 to 155mph)
Advance (0 to 45°BTDC)
IAT (0 to 130°F)
MAF (0 to 30 lb/min)
TP (0 to 100%)
O_2 Sensor B1 S2 (cycles from 0 to 1V KOER)
O_2 Sensor B2 S2 (cycles from 0 to 1V KOER)
MIL (OFF)
Lambda B1 S1 Equivalency Ratio (1 ± .1 KOER)
Lambda Current B1 S1 (0 ± 5mA KOER) + = lean, - = rich
Lambda B2 S1 Equivalency Ratio (1 ± .1 KOER)
Lambda Current B2 S1 (0 ± 5mA KOER) + = lean, - = rich

Used XK8 Buyer Advice
After reading and understanding information presented in this article, the following items should be included in your condition inspection. You should also line up a competent Jaguar mechanic to go over target vehicle prior to money changing hands. First owner depreciation is ~$1/mile. Second and third owner costs will be much less, provided you are able to care for the car yourself.

1. Overall Condition and Mileage. Look at driver's seat leather, cup holder/center armrest and pedal rubber. Does car look reasonably clean and well cared for? Target vehicles should have no more than 120Kmi to be good candidates, and it helps your pocketbook immensely if you can troubleshoot and do most of your own repairs. Look for coolant-free oil and oil-free coolant. Ensure body panel colors match, body is free of dents/scratches and there are no unpleasant odors.

2. Service History and Seller Evaluation. Look for either parts receipts and labor invoices or seller mechanical knowledge and ability. Always speak to whoever maintained car and do a reality check on any claims made (trust, but verify).

3. Cooling Systems. Check coolant color (orange) and level. Pressurize cooling system when cold for several hours at 14.5psig (1bar) to check for leaks. Start car and observe exhaust during initial start and warmup. Inspect fans, radiator fins and hoses for good condition and proper operation. Does engine come up to temperature in five minutes in middle of gauge range and stay there? Fans should cycle from OFF when cold, to Series (Slow) when warm and to Parallel (Fast) when hot or A/C turned ON.

4. Engine Condition, Fluid Leaks and Noises. Look for all conditions indicating neglect or incomplete maintenance. Remove plastic covers and disconnect each coil in turn for a few seconds to observe rpm drop. Engine should crank and start readily. Perform a compression check on all cylinders (~200psig). Use a borescope to inspect cylinder walls, valves and piston crowns. Check MAP with OBD2 scanner at idle. It should be <12inHg on a healthy engine at MSL. Listen for unusual tappet or primary chain noises. Check oil level and condition.

5. Engine Bay. Look for cleanliness and attention to detail. Are all fittings and parts OE equivalents? Remove each firewall compartment cover and examine. Look for evidence of plugged drains or standing water in compartments. Ensure covers are intact with two tabs and retainer. Check brake and power steering fluid levels and condition. Look for proper engine mount condition with a quick stab of throttle.

6. Drivetrain. Look for Guibo condition and leaking seals.

7. Suspension. Bounce on each quarter panel to observe damper compression and rebound authority.

8. Steering and Brakes. Look for centering tendency, absence of slop and good braking authority. Look under car to ensure there are no caliper leaks. If you can get each wheel up in turn, check ball joints, bearings and observe smooth rotation.

9. Wheels and Tires. Visually evaluate tire type and tread, check for curb rash, correct pressures and condition. Look for bent wheels and separating chrome.

10. Electrical and Lighting. Ensure all systems operate to spec both day and night. With engine running, check charging voltage at battery B+ (it should be ~14.5VDC at idle and greater than 12.35VDC engine OFF). With key ON, ensure that all Instrument Cluster indicator lamps are ON and that they all go out shortly after engine start. Check to see that dimmer controls dash and door switch lamps. Check battery condition and ensure terminals are free of corrosion.

11. Entertainment Center and Instruments. Ensure all items operate to spec and radio antenna extends, retracts and stops. Operate all panel buttons and steering stalk functions both sides.

12. Soft Top. Cycle soft top and observe action. Pump should not sound labored and top should close/open in <20sec. Check for proper window sequencing. Check external fabric, headliner condition and ensure soft top cover is available. Ensure any dash mat is well attached.

13. Interior and Seats. Inspect for leather condition, seat and steering column movement/position memory, lumbar inflation function and ensure headrests drop as seats are drawn forward and restore upon return. Ensure floor mats have plastic retention hooks. Verify that glove box lid closes properly and locks.

14. Body, Paint and Corrosion. Operate all doors, boot, bonnet, fuel filler door and all locks both manual and remotely operated via key fob. Look for nicks and overall finish condition. Inspect rocker panel welded joints.

15. Glazing. All Jaguar windshields will have a degree of pitting, but ensure glazing is otherwise in good condition with no chips or cracks. Check for window drop as each door is opened and rise as it is closed. Ensure windows roll all the way up, all the way down and rear window heater is functional.

16. Plastic and Rubber. Look at all plastic and rubber items in engine bay, under car and window and door seals.

17. Missing Items. Ensure alternator cooling scoop is in place under car and passenger side wiper arm pivot cap is not missing. Ensure there are two sets of black driver keys, a single green valet key, tool kit and compact spare tire in good condition.

18. Smog Reports. Review for trends. Check miles per gallon on dash display and see if it makes sense. Ensure there are no alert lamps illuminated and no squawks on panel message center. Check exhaust tips for excessive carbon buildup.

19. OBD2 Scan. With your scanner attached, drive car somewhere and shut it down for a few minutes. Start it up and drive it back. It may take multiple events before OBD2 system logs a code. Capture 15min of live scanner data at speed. Look particularly at coolant temperature, long term fuel trims, O_2 sensor readings and readings indicating catalyst condition.

20. Test Drive. Engine should idle smoothly and take throttle readily with no stumble or surging in any gear. Low end torque should be apparent and steering should be neutral and not twitchy. At low speed, suspension should be firm and at freeway speeds (and up) car should be well under control regardless of road conditions. It should corner as though on rails with virtually no lean. Shift into manual (J gate) under a variety of conditions and observe results. There should be smooth shifting and exhaust note should remain a low burble with no popping even under aggressive downshifting conditions. Engage and disengage cruise control and sport mode functions. Note all gauge readings and recheck miles per gallon on dash computer display.

Jaguar XK8 Service	Every	Or
Change Oil, Filter and drain Catch Can	5Kmi	4-6mo
Add Berryman's B-12 to Full Fuel Tank	5Kmi	
Inspect Wiper Blades (21") and fill Washer Fluid	5Kmi	
Inspect Tire Tread and Pressure (32psig Cold)	5Kmi	
Inspect Engine Cooling Fans (Off/Slow/Fast)	5Kmi	
Inspect Brake Pads, Rotors and Hand Brake	5Kmi	
Inspect Rubber Boots for Damage	5Kmi	
Inspect Mirrors and Central Locking System	5Kmi	
Inspect Seats, Headrests and Safety Restraints	5Kmi	
Inspect Horn, Headlamps, Fog Lamps and Hazard Flasher	5Kmi	
Inspect Lamps and Interior Controls	5Kmi	
Inspect Air Conditioning, Heating and Rear Defogger	5Kmi	
Replace Brake and Power Steering Fluids	30Kmi	2-3yr
Lubricate Hinge Points and Door Locks	30Kmi	
Silicone Spray Rubber and Noxudol Rust Prone Areas	30Kmi	
Grease Rear Half-Shaft U-Joints	30Kmi	
Clean/Replace Air Filter	30Kmi	
Replace Transmission Filter Pan and Fluid	60Kmi	4-6yr
Replace Expansion Tank and Cap	60Kmi	
Replace Thermostat and Outlet Pipe Assy	60Kmi	
Replace Spark Plugs	60Kmi	
Replace Fuel Filter	60Kmi	
Replace Battery	60Kmi	
Replace Coolant	60Kmi	
Replace Coolant Pump	90Kmi	6-9yr
Replace Serpentine Belt	90Kmi	
Replace Upper and Lower Coolant Hoses	90Kmi	
Replace Engine Side Oil Cooler Hoses	90Kmi	
Replace Upper Front Shock Mounts	90Kmi	
Replace Upper Control Arm Bushings	90Kmi	
Replace Front Wheel Speed Sensor Cables	90Kmi	
Check Intake Elbow Booster Pipe Fitting for leaks	90Kmi	
Clean Fuel Injectors and Mass Air Flow Sensor	90Kmi	
Replace Brake Pedal Position Switch	90Kmi	
Replace Starter Relay	90Kmi	
Replace Anti-Roll Bar Bushings	120Kmi	8-12yr
Replace Upstream Air/Fuel Ratio Sensors	120Kmi	
Replace Crankcase Breather Pipes	120Kmi	
Replace Soft Top Hydraulic Hoses	120Kmi	
Replace Front Shocks	120Kmi	
Replace Valley Hoses	120Kmi	
Replace Heater Pump and Octopus Hose	120Kmi	
Replace Differential Fluid	120Kmi	
Replace Ignition Coils	120Kmi	
Replace Cam Position Sensors	150Kmi	10-15yr
Replace Guibo	150Kmi	
Replace Radiator	180Kmi	12-18yr
Replace Ball Joints and Track Arm Bushings	180Kmi	
Replace Power Steering Hoses and Rod Boots	180Kmi	
Replace Rear Shocks	180Kmi	

Engine Bay Mating Connectors

Cam Position Sensor (2 Socket Black Plug) (2)	SMP S1263
Coolant / Fuel Temp Sensor (2 Socket Gray Plug) (2)	SMP S2034
Crank Position Sensor (2 Socket Black Plug)	SMP S824
Fuel Injector (2 Socket Black Plug) (8)	SMP HP3945
Fuel Pressure Sensor (3 Socket Black Plug)	SMP S821
MAF Sensor (5 Socket Black Plug)	Yazaki 7283-1057-30
MAP Sensor (4 Socket Black Plug)	Ford WPT-1339
Oil Pressure Sensor (1 Socket Plug)	SMP S940
VVT Solenoid (2 Socket Black Plug) (2)	SMP S1415

Common Replacement Items

ABS Harness Front Right / Left (1ea)	LJG3410AC / LJG3410FC
Battery	Duralast H8-DLG
Brake Pedal Position Switch	LJB6420BB
Cam Sensor Bank-1 / Bank-2 (1ea)	LRA1646BC-C2 / AJ84290
Coil (8)	SMP UF-519
Coolant Outlet Pipe Assembly	AJ89486
Coolant Pump	AJ88912/X
Downstream O_2 Sensor (2)	Denso 234-4798
EGR Valve	SMP EGV1110
EGR Valve Coolant Hose	AJ88513
Expansion Tank w/Cap	MJD4400AB
Front Shock Shaft Bumper (2)	MJA2150BA
Front Wheel Bearing (2)	Timken 510010
Fuel Filter	Mahle KL83
Fuel Pump	Airtex E8648M
Guibo	CBC8996
Half-Shaft U-joint (4)	JLM1388
Heater Aux Pump	MJA6710AA
Heater Control Valve	MNA6711AC
Knock Sensor (2)	AJ85676
Linear Switch Module	C2N2467
MAF Sensor	SMP MAS0188
MAP Sensor	SMP AS388
Octopus Hose	MJA6728AC
Oil Filter	Mahle OC602
Radiator Coolant Hose Lower / Upper (1ea)	C2N1173 / C2N1174
Reach Motor Drive Cable	Coventry West JLM12187cable
Rear Inner Bearing and Race (2)	Timken Set45
Rear Outer Bearing / Race (2ea)	Timken LM503349A / LM503310
Relay (15)	LJA6703AA
Serpentine Belt	6PK2310
Spark Plug / Gap / Torque (8)	NGK IFR5N-10 Iridium / .040” [1mm] / 20 lb-ft
Tensioner / Idler Pulley Bearing (2)	Timken 6203-2RS
Throttle Body Coolant Hose	AJ88519
Throttle Body to EGR Valve Hose	AJ88092
Tires Front / Rear (2ea)	P245/40ZR19 / P255/40ZR19
Transmission Filter/Pan	C2C38963
Upper Front Shock Mount (2)	MJA2170BD
Upstream Air / Fuel Ratio Sensor (2)	Denso 234-9029
Valley Hoses (1ea)	AJ86326 and NNE3946CA

Fluids

Brake	Motul RBF600
Coolant/Distilled Water 50/50	10qt Dex-Cool (Orange)
Differential	2qt Redline 75W-90 Synthetic
Oil	8qt Pennzoil 5W-30 Synthetic
Power Steering and Soft Top	Pentosin CHF11S
Transmission	Redline D6 or ZF Lifeguard6